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COMPETITION AND MONOPOLY IN PUBLIC UTILITY INDUSTRIES

BY

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PREFACE

The fundamental economic problems of public utility enterprise and its regulation are inextricably linked with the scope and effects of competition and monopoly. That monopolistic and competitive forces underlie many public utility problems is almost self-evident and has been recognized in a general way, but there never has been an attempt to present a unified treatment of public utility affairs from this point of view. There seems to be afforded, therefore, a fitting approach to fundamental and still controversial issues by a comprehensive analysis of the bearing of competition and monopoly in public utility business, especially where rate making, public welfare, and social control are involved.

The years since the turn of the twentieth century have marked, first, the gradual elimination of duplicated public utility properties, and the ascendancy of monopoly subject to legal control. Dissatisfaction with the prevailing regulatory machinery and with the practices of private companies indicates the possible reinstatement of some direct competition in the future. Second, the struggle for the market between public utility services and substitute products and services has recently been given great emphasis in the literature of public utilities. This study proposes to investigate the present status and the probable future trend of direct competition in the public utility field, to judge the effectiveness of indirect competition by substitution as a means of control, and to ascertain and to criticize the extent to which public utility rates are affected in practice by competitive factors.

Such a program necessitates also an attempt to determine whether the public service companies, once they have been granted the exclusive privilege of providing for fundamental social needs, have advanced that end to the greatest extent. The question is whether there are available and in use sufficient checks upon monopolistic power to assure the highest measure of social service in the rendering of essential public utility services. The point of view adopted for this study is that any method of meeting basic economic needs probably will not, and certainly should not, endure unless it represents the best available way to accomplish the fullest measure of service to society and unless there is a recognition of that social responsibility on the part of those who furnish the services. This is the issue in the present and proposed activities of the federal government in the development of power resources and in the suggestions and efforts being made to effect a sound coordination of the various means of transportation.

Since the purpose of this study is to scrutinize public utility enterprise and its regulation by public authority, insofar as monopoly and competition are involved, it has been necessary to examine the opinions of the

public utility interests and to study the judgments of the state commissions recorded in their published decisions. Secondary material, fragmentary and opinionated for the most part and much of it noticeably biased, has perforce been consulted extensively. It has been necessary to peruse the trade journals because an acquaintance with the opinions and practices of the public utility interests can best be gained by reference to their publications. Investigations conducted in recent years by various agencies of the federal and state governments have provided much useful material not hitherto available. Statistical data, from government and private sources, have been indispensable, and information received through correspondence with various men in business and regulatory circles has been helpful and is gratefully acknowledged.

The writer has endeavored to avoid unjust condemnation in his criticisms. In view of the mass of confused and biased literature which bears on the problems of this investigation, an open mind has been as essential as it has been difficult to maintain. In order to focus attention on the competitive and monopolistic forces, it has been necessary to be comprehensive and concise in dealing with many points, except where brief treatment would result in superficiality. In regard to the comparative efficiencies of alternative methods of supplying a given service, e.g., for power or heat, it has been necessary to avoid prolix technical discussion and to rely largely upon the conclusions of what seem to be the most competent and unbiased investigators. This difficult and dynamic field is still incompletely explored in a scientific way, however, so that care must be taken not to confuse assertions with facts.

This study was undertaken originally at the suggestion of Dr. Horace M. Gray, Associate Professor of Economics in the University of Illinois. For his helpful suggestions at all times, grateful acknowledgment is made. The writer also is indebted to Dr. M. M. Bober, Professor of Economics in Lawrence College, to Dr. Frank Fetter, Professor of Economics, *Emeritus,* in Princeton University, and to the late Dr. Edward Berman, formerly Associate Professor of Economics in the University of Illinois, all of whom read the manuscript at one stage or another and offered valuable suggestions. The judgments and conclusions expressed in the following pages are those of the writer, however, and only he should be held accountable for them.

Some of the ideas developed in this monograph, particularly in Chapters VI and VII, were included in an article entitled "Competitive Significance of Substitutes for Public Utility Service," which was published in *The American Economic Review,* March, 1937.

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CHAPTER I

INTRODUCTION

This monograph might be considered, in part, as a study of public utility regulation, for it is apparent that an examination of the extent and action of competition, and of its counterpart, monopoly, in the public utility industries is closely associated with the problem of social control. Insofar as duplication is permitted, there is an admission that regulation by law is not able to control effectively. The present agitation for municipal competition, for the introduction of laws less favorable to the protection of the monopolized industries, and for complete public ownership and operation is witness to the imperfections of the regulatory process. Hence, it is not surprising that there is developing an insistent demand for greater reliance upon competition as a supplement to regulation, not because it is the preferred method of organization and control for these industries, but because regulation has not been equal to the task set before it.

It is granted, of course, that the acceptance of governmental regulation of rates and services should not mean the abandonment of economic principles. Legal attempts to control public utility affairs very properly take sound economic doctrine as their starting point. Statutory and administrative regulation has not attained perfection, and this makes pertinent the question whether or not it is desirable to place some reliance upon competition as a means of control over public utility enterprises. Without passing judgment at once on the proper relationship between legal control and freedom of enterprise, it should be noted that the regulatory bodies themselves have not been inclined to sever all relations with the economic laws of competitive price. To the contrary, the tendency has been to call attention to the fact that "state regulation correctly administered does not abandon economic principles."[1] Regulation, it has been stressed, is to be considered "an aid to, and not in lieu of, and must harmonize with natural laws."[2] That "there are now and probably always will be situations in which public convenience and necessity are best served by a certain amount of competition,"[3] is a common expression by public utility regulators. Since this is a common view

[1] *Re Terre Haute, I. and E. Traction Company* (Ind.) P.U.R. 1923B, 731. Cf. *Farmers' and Merchants' Co-operative Telephone Company* v. *Boswell Telephone Company* (Ind. Sup. Ct.) 187 Ind. 371, P.U.R. 1918E, 172, 177.
In the headnote of another case this statement is found: "The prevailing policy in the state regulation of public utilities favoring regulated monopoly rather than the encouragement of competition is not an absolute and unvarying rule and should be followed only where public interest is protected by its application." *Re Industrial Gas Company* (Mo.) P.U.R. 1929A, 516.
[2] *Re Terre Haute, I. and E. Traction Company* (Ind.) P.U.R. 1923B, 731.
[3] *Ibid.*

of regulatory authorities, it is desirable to go to commission policies as set forth in their decisions to ascertain what place now is given to competition in the scheme of public utility control.

One remedy that has been proposed for the infirmities of regulation is to base rate control on the competition which public utilities meet in the form of substitute products and services. It is contended that the public utility industries, far from being "natural" monopolies by virtue of legal restriction of duplicate properties, operate under conditions that are predominantly competitive. The allegation that the choice of *what* to buy is equivalent as a price-conditioning influence to that of *where* to buy a single product or service invites investigation. When it is asserted, for example, that over seventy-five per cent of the electric light and power business is highly competitive, or that except for a "trivial amount" the local utilities are subject to "keen competition," a statement is made which should not go unchallenged.[4] Popular opinion, including that of many who would deny that the other classes of public utility customers are served under competitive circumstances, would express an overwhelming belief in the strictly competitive nature of the industrial power and heat business. Aside from the question whether or not competition can be relied upon, with justice to all concerned, to effectuate reasonable rates, there is a further field of inquiry regarding the extent to which competitive factors are taken into account now in rate-making procedure. It is within the province of this work to examine the assertion that the traffic-will-bear principle, rather than cost, is the prevailing rule in rate making, applied in such a way as to favor some classes of service at the expense of others.

Briefly, the purposes of this study may be stated as follows: first, to show the basis for and the extent of monopoly in the operation of the local public utilities, with special attention to a critical survey of state commission procedure under the law regulating public service companies and to the increasing reliance upon competition as an ally of regulation; second, to judge the effectiveness of competition by substitution of alternative products and services in restraining public utility rates, and, following from that, the advisability of permitting rate making based solely on the competitive principle of what the traffic will bear; and, third, to ascertain how rates are determined for the several classes of customers at the present time under state regulation and to pronounce judgment upon those methods. Latent in all these considerations is the question whether or not the present organization and conduct of public service enterprise need to be changed in order to serve adequately the welfare of society.

[4]Cabot, Philip, "Public Utility Rate Regulation," *Harvard Business Review*, Vol. 7 (1929), pp. 257, 415.

This study is limited to the local utilities, more specifically, to the electric, gas, telephone, and local transportation industries. Specific references to the water utilities are meagre because competition is of less account in that industry. There are also occasional references, chiefly for purposes of analogy, to interstate operations and to the railroads, which are subject to federal regulation. If nothing else, this procedure may serve to demonstrate that the characteristics of the railroad industry and of the local utilities are distinctly similar insofar as competition and monopoly are concerned. In fact, it might have been wise to study them all together were it not for the fact that some restriction of the scope of the study seemed advisable in order to permit a more intensive examination. Indeed, exclusive attention might have been devoted to a single one of the local utilities. There is great need for detailed research on a basis of cost and quality of service to determine the true relation of alternative products and services which seem to be real competitors. But what might have been gained by that method in simplicity of treatment and finality of conclusions would have been more than balanced by the loss in perspective which can be attained by covering a fairly broad field. As it is, the electric light and power industry has been the recipient of the greatest share of attention, partly because it affords the most available data and partly because the principles which are in the main generally applicable to the other utilities, despite differences of detail and of administration, can be demonstrated more clearly in that type of enterprise.

One noteworthy difference between the electric light and power industry and the local transportation utilities is that while the latter have been on the defensive in the competitive battle with non-utility alternatives such as the taxi and the private automobile, the electric light and power industry has been the aggressor in its field, seeking to extend its domain into the territory formerly dominated by other sources of energy. This is but one way of expressing the known fact that the electric light and power industry is a rapidly expanding industry while the local transportation utilities are growing much more slowly, if at all. However, there is probably no difference in the fundamental effects of the competition even so, although it may be true that indirect competition is a more adequate check on rates in the case of a public utility forced to battle for its continued existence than in the circumstance where the public service industry can carry the competitive challenge to its rivals at its own inclination.

This study seeks to bring into relief fundamental principles. Even though comprehensive and reliable data were readily available concerning all of the problems touched upon, which is decidedly not the case, limita-

tions of time and space would not permit complete discussion of particular topics covered in this investigation. Cursory treatment of numerous problems has been unavoidable in covering so broad a field. Domestic rates, municipal competition, the certificate of convenience and necessity, rural electrification, intercorporate relations, sales policies, and the promotional rate, to mention a few, are all subjects worthy of extended individual treatment, and some of them have received it. But each of these matters could be considered only insofar as it had a distinct bearing on the main theme, the competitive and monopolistic aspects of public utility enterprise.

It is apparent that many of the writers on public utility economics, and especially the supporters of the doctrine that intense competition by substitution obtains in the public utility industries, have been blinded by the glare of exceptional situations, and have been led to the erroneous conclusion that the special circumstances that they depict are typical of the industries as a group. A broader view, based on the facts to be sure, but avoiding the pitfall of inductive reasoning to a generalization that is false because too narrow a range of data has been surveyed, has been adopted in the present examination.

The work cannot claim to be conclusive on every point raised. More questions are introduced, no doubt, than problems solved. Nevertheless, a recognition of problems and of their ramifications is prerequisite to their solution. It is believed that the extent, results, and import of competition in the public utility enterprises are set forth in the following pages in a more comprehensive fashion than heretofore has been attempted. If so, to the extent that the need for social control is dependent upon the ineffectiveness of competition as a regulating force, this study aims to be helpful in indicating the direction that reform in regulatory policy and procedure should take.

Since one of the main objectives of the investigation has been to examine commission policies in controlling competition and in allowing for it in rate making where competition cannot be eliminated, commission cases and court reviews which bear any reference to monopoly and competition have been consulted in detail. It has been deemed more appropriate to concentrate attention on the activity of the commissions under the law than on the legislation itself. This is consistent with the view that it is not so much the prevailing theory of legal control which is under fire as it is the results which have been obtained in the practical application of the principles inherent in the laws. Because the study has been concerned more with commission procedure under the law than with the statutes themselves, not much time has been devoted to a perusal of the laws except where that has been essential to an interpretation of the

legality of commission action.[5] The regulating activity of the leading state commissions has been given special attention, as typical of the most advanced thought and practice in regulation and rate-making.

Because the terms competition and monopoly are concepts fundamental in this study, it is imperative that there be a clear understanding of what is meant by them. Interest is directed here to the play of competitive and monopolistic forces in public utility business, but the observations that are made bear on the more general problem of the functioning of the two forces in all of economic activity. Likewise, attention is centered on competition and monopoly in selling the service, but not entirely to the exclusion of their operation in other phases of public utility activity. When public utility rates are the object of investigation in a succeeding chapter, a focal point is found in the competition among buyers who arrange themselves into more or less distinct classes so as to create the problems of composite demand and discrimination.

Of the two concepts under observation, competition especially has not received, until recently, sufficient painstaking analysis by economic writers. Consequently, it is a blanket term that has been made to cover a number of ideas and hypotheses which appear sometimes to be paradoxical.[6] But the notion of independent action or individual quest for maximum gain is the starting point. Self-interest is the keynote, and in essence competition is a race of one against another. Economic competition, however, is expected to be more than a mere selfish struggle for existence whereby one person gains to another's disadvantage. The distinguishing feature of economic competition is that the rivalry is directed to the rendering of service and to the obtaining of scarce goods on the part of the buyer in the market. Competition in selling, or the endeavor of sellers to court buyers' favor, is expected to lead to the weal of society by improvement of quality and the lowering of price by restricting the latter to the point of cost. Economy in the utilization of material and human resources likewise is supposed to result from their direction into channels where demand, as reflected in price, is most insistent.

The doctrine of the advancement of welfare through competition does not go unchallenged, however. Not everyone has been willing in all circumstances to shake the "invisible hand" of Adam Smith, and there has

[5]Two sources have been particularly useful in providing information concerning the extent of jurisdiction of state commissions to regulate public utilities. See Bonbright and Company, *A Survey of State Laws on Public Utility Commission Regulation in the United States* (2d ed.). Federal Power Commission, *State Commission Jurisdiction and Regulation of Electric Rates and Service, Electric Rate Survey*, Rate Series No. 6, 1936.

[6]One writer has mentioned the following hypotheses which have been associated with the idea of competition: firstly, every economic factor seeks a maximum net income; secondly, there is but one price for commodities of the same quality in the same market; thirdly, the influence of the product of any one producer upon the price per unit is negligible; fourthly, the output of any one producer is of minor importance compared with the total output; and fifthly, each producer orders the amount of his output without regard to the effect of his act upon the conduct of his competitors. Moore, H. L., "Paradoxes of Competition," *Quarterly Journal of Economics*, Vol. 20 (1905), p. 211.

been a noticeable reaction against self-seeking individualism in an increasing number of fields. It must be remembered that under a system of private property and freedom of contract, competition implies not only rivalry in rendering a service, but also alertness in exacting the greatest possible amount of gain in exchange for a minimum of sacrifice or cost. Competition has not always been equal to its task as a spontaneous form of beneficent control. The conception of a competitive price as a "natural" price is not reassuring when it is realized that competition rarely if ever works in practice with the precision and perfection which theory ascribes to it.[7] Sometimes competition operates apathetically; in other circumstances it degenerates into costly and bitter rivalry. Deceit in purveying inferior quality, class warfare between unequals, and undue "puffing" in advertising and selling vitiate the claim for the universal beneficence of competition. Sometimes the race which is termed competition descends into cut-throat tactics, with their resultant instability. Then there is loss from duplicated effort; but competition loses its *raison d'être* when it does not economize resources and conserve human energy. Competition, then, bears no charm which merits the badge of inherent justification. Competition, rather than simply a "natural" phenomenon, is a social experiment continually on trial, and it may be accurate to say that many economic activities are left to the mercy of competitive self-seeking because of the "sheer default of any clear social judgment or effective social policy."[8]

Competition has been used in this study not only to include the struggle of like with like but also to denote the rivary between substitute commodities and services in the same market. Direct competition has been used to cover the entire production of a single service from whatever source derived, when those sources may be said to be competing in some degree with each other. For example, electric energy may be produced under competitive conditions by two privately owned public utilities, by a privately owned utility and a municipal plant, by a mutual company and a public utility, or by a public utility and an isolated private plant. The comparison of rates between localities ordinarily considered separate market areas is likewise discussed under this head, for such comparisons are sometimes influential, supposedly, in determining the location of industry, and rate contrast is a device frequently used by regulating bodies in their attempts to ascertain reasonable rates. The "yardstick" idea is getting too much attention now for it to be ignored in this investigation.

The term direct competition has been adopted because it offers the most convenient approach to the problem of competition in public utility

[7] Robinson, Joan, *The Economics of Imperfect Competition.*
[8] Clark, J. M., *Social Control of Business,* pp. 50-51.

industries, there being a separate treatment of the indirect competition covering situations where two or more products or services, non-identical physically but similar in use, seek to satisfy the same demand. As an example, wood, coal, oil, gas, and electricity are alternative ways of providing heat and power. The competition for the consumer's dollar is given some consideration in this connection also. Apart from the convenience of treatment, the distinction made between direct and indirect competition appears logical, for the nature of the product or service is more fundamental to the question of whether competition is direct or not than is the source of that product or service.

At the opposite extreme from conditions of pure competition stands monopoly; and, from one point of view, all competition may be looked upon as a striving after monopoly. In fact, the simplest way of defining monopoly is by reference to and in terms of its antithesis, which is competition. The meaning of monopoly has been said to be "that substantial unity of action on the part of one or more persons engaged in some kind of business which gives exclusive control, more particularly, though not solely, with respect to price."[9] When such control is achieved, the monopolist's pricing policy, unless restricted, will be governed by the desire to obtain the greatest possible net profit.

In this investigation, the supply side of the market is the primary interest. For present purposes, then, the essence of monopoly is control over supply such as to give some control over price. But in the case of a seller's monopoly, it is not to be supposed that the price control of the monopolist is in no degree curbed. Control of supply does not include the power to compel demand, which remains an independent factor wielding its own influence in price determination. The monopolist still must take into account the elasticity of the demand for his product or service; and the degree of elasticity, in every case, will depend in some part on the possibility of substituting an alternative product or service for the monopolized one. Moreover, when a monopolist controls a product or service which is produced under conditions of decreasing cost, another complication appears which adds to his difficulty in determining the price that will yield the greatest net revenue.

Careless use of the terms competition and monopoly has resulted in inaccurate conclusions as to their relative prominence in the public utility industries. There has been a general tendency to refer to a business as though it were either purely competitive or entirely monopolistic. Hence, any evidence of competition in a public utility enterprise has been offered as proof of the competitive nature of the business. At the same time, the fact that some public utilities are protected, within limits, from rival

[9] Ely, R. T., *Monopolies and Trusts*, p. 36.

sellers has served to stamp them as "natural" monopolies in the minds of others. In the words of a recent investigator of the operation of competition in a field wherein sellers are few in number, there is a "general disposition . . . . to regard economic phenomena as adequately explained by the theory of monopoly at one extreme, and of competition at the other; and especially to regard the theory of 'perfect' competition as an acceptable approximation for all cases where there is any element of competition at all."[10] The close relation of this study to the theory of monopolistic competition, which has been developing rapidly in the last few years, will be obvious to those who have been following that development.[11]

An accurate judgment of the situation in the public service industries demands a recognition that competition and monopoly are never absolute; they are perhaps never found in the pure form. In most circumstances, elements of both competition and monopoly will be found to be coexistent. If the monopoly elements are stronger, there is a degree of price control by the monopolist. In this connection, there arises the question as to how much price-determining influence can be attributed to the competition of one product or service with another product or service which caters to the same demand. In such cases, the problem is complicated by the necessity for balancing qualities of service against price differences in order to put the competing commodities and services on a comparable basis.

The controversy as to whether monopoly or competition is the more efficient form of organization, which generally has resulted in a verdict in favor of competition, probably has been inaccurately phrased. "Their mutual relationship is concealed when they are treated as absolute opposites"; for while "they are indeed antagonistic, yet, as may be asserted of all opposites, they not only conflict, but generate each other. An organization of exchange based upon the principle of competition can nevertheless exhibit monopoly conditions. Monopoly and competition are special positions and strategic groupings of sellers and buyers in exchange and in price making, one of which shades imperceptibly into the other."[12] It is believed that the problems which this study undertakes to analyze will be made more understandable if the idea that competition and monopoly are not mutually exclusive is kept in view.

In fact, it would be well for economists always to recognize specifically the relativity of competition and monopoly. Economists sometimes write, and apparently think too, in terms of a perfectly competitive

[10]Chamberlin, E. H., "Duopoly: Value Where Sellers Are Few," *Quarterly Journal of Economics*, Vol. 44 (1929-1930), p. 63. Cf. Foreman, C. J., "Theories and Tests of Monopoly Control," *American Economic Review*, Vol. 9 (1919), p. 482.

[11]Chamberlin, E. H., *The Theory of Monopolistic Competition*.

[12]Liefman, R., "Monopoly or Competition as the Basis of a Government Trust Policy," *Quarterly Journal of Economics*, Vol. 29 (1914-1915), pp. 308, 315.

mechanism, without stressing the unreality of such a concept in actual economic activity. To do so gives to the statement of an economic law a simplicity and rigidity unwarranted. It widens the breach between a theoretical pricing system based on competitive action and the artificially begotten rules of state-regulated prices. When it is pointed out that state determination of a fair price or rate is not always very satisfactory, it should also be remembered that "competitive" prices in the real world are not determined so simply and automatically as is customarily assumed. Ignorance, tradition, inertia, transitions, and monopolistic elements complicate the economic machinery, and give rise to all those exceptions and variations to economic laws which are encompassed in the terms "economic dynamics" and "frictions."

The following chapter is a brief outline of the development of public utility control from the early period of unsatisfactory competitive duplication down to the introduction of the mandatory state commission, the prevailing regulatory device at the present time. In Chapter III, the theoretical basis for seller's monopoly in public utility industries is discussed, and the nature of the market in purchasing transactions also is examined. The popularity, until recently, of public utility securities in the markets for capital, a standing which was achieved by the partial escape from the uncertainties and risks of competition, is noted. The competitive risks in public utility enterprises are mitigated, also, by virtual control of the seller's market, by complex intercorporate relationships, and by the use of fuel clauses. A few paragraphs at the end of the chapter are concerned with competition in the merchandising of appliances. Chapters IV and V examine the present status of direct competition in the public service industries, stressing commission control of competition under the law, the possibility of wide-spread municipal operation in the future, the significance of proposed power projects promoted by the federal government, and the struggle with the isolated plant. One of the main objectives of the study, to pronounce judgment upon the claim that indirect competition, as defined above, is sufficiently effective in the local utility industries to constitute a rate-restraining influence which will insure the consumers against exorbitant rates, is the scope of Chapters VI and VII. Following that, Chapter VIII aims to discuss and to criticize present rate-making practices and commission supervision of them, especially insofar as competition is a factor in the designing of rates. Chapter IX is a summary of the entire investigation.

CHAPTER II

OUTLINE OF THE DEVELOPMENT OF PUBLIC UTILITY CONTROL

The reasons for the present regime in public utility operation under monopoly cannot be completely comprehended without some attention to the circumstances which attended the development of public utilities and to the early experiments with various regulatory devices. It is not intended to provide an exhaustive narration of public utility development and of the gradual supplanting of competition by monopoly and regulation. The availability of thorough studies on this subject makes more than a brief recital of the early conditions unnecessary in the present work.[1] The present chapter is a narration of historical facts. It is concerned with the experiences and results which attended competitive operation of public utility enterprises. It therefore paves the way for, and requires as its supplement, the following chapter which treats of the economic basis for and the economic limits to monopoly in the public utility industries.

Needless to say, it is inexact to set off any particular period as monopolistic or typical of regulation of a specific type. The truth is that the history of the regulation of local utilities has been characterized by experimentation, varied simultaneous policies, and frequent change. Different currents of public opinion and public policy have been operative at the same time. Consequently, when periods are signified, it is to be understood that trends are indicated. Indeed, there are examples of competition in public utility operation today which are as cut-throat as can be found in the nineteenth century, and which by themselves amply illustrate the undesirability of duplication in the public utility industries.[2]

It was not unnatural that competition should have been accepted as proper in the public service enterprises in the beginning. The country had been built upon the competitive ideal. Economic freedom had been a rule of thumb in legislation. The country was young and undeveloped, and encouragement to initiative and to business promotion was believed to be imperative. Especially was the latter true of the new public service industries which held so much promise for good in promoting power production and in offsetting the disadvantages of urban congestion. What was not foreseen was that freedom of enterprise may breed strongly entrenched monopolies under some circumstances rather than the com-

[1] Wilcox, D. F., *Municipal Franchises.* Glaeser, M. G., *Outlines of Public Utility Economics.* Other sources are mentioned in the foonotes on the following pages.
[2] *Re Bowdoin Utilities Company* (Mont.) P.U.R. 1931B, 20.

petition which often is considered the normal outcome of free enterprise.

Technical limitations in the early days help to explain the existence of several companies in one locality. The use of direct current at low voltages in the electrical industry made distribution over areas exceeding one square mile impossible. With the subsequent improvements in generation and transmission, the previously small and non-competing enterprises in one city sought to expand by encroaching upon one another's territory, and spirited competition began. Difficulty in raising large amounts of capital for utility undertakings also fostered the development of small local companies in this early period.[3] Rivalry between electrical equipment manufacturers, in whose control the development of that industry began, contributed to the location of several production and distribution units in one city. Rapid improvement in technical efficiency and in the investment standing of the industries made larger producing and distributing units possible and accounted for the cut-throat competition which soon appeared.

There was an even stronger reason why competition presented itself in the utility industries, aside from the failure to realize their monopolistic inclination. Law making, which is the source of comprehensive regulation, is slowly evolved. Regulatory mechanisms were not invented in the same laboratories with the electric light and the telephone. Monopoly, then as now, could receive public sanction only upon the provision of an adequate control. The story of the development of that control is the history of the struggle to eliminate uneconomic competition and is at the same time the history of the search for effective regulation. That quest is not yet ended.

There is scarcely a city in the country that has not experienced competition in one or more of the utility industries. Six electric light companies were organized in the one year of 1887 in New York City.[4] Forty-five electric light enterprises had the legal right to operate in Chicago in 1907.[5] Prior to 1895, Duluth, Minnesota, was served by five electric lighting companies, and Scranton, Pennsylvania, had four in 1906.[6]

Since, aside from water supply companies, the gas industry is the oldest public utility of present-day consequence, the early experiences in that type of enterprise are noteworthy. During the latter part of the nineteenth century, competition was the usual situation in the gas industry in this country. Before 1884, six competing companies were operating in New York City.[7] The following other cities, to name only a few

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[3]Federal Trade Commission, *Supply of Electrical Equipment and Competitive Conditions*, Sen. Doc. 46, 70th Cong., 1st Sess., 1928, pp. 164, 208.
[4]Wilcox, D. F., *op. cit.*, p. 142.
[5]National Civic Federation Report, *Municipal and Private Operation of Public Utilities*, 1907, Vol. I, Pt. II, p. 719.
[6]Federal Trade Commission, *Supply of Electrical Equipment and Competitive Conditions*, p. 209.
[7]*Competition in Illuminating Gas*, anonymous pamphlet, 1885, p. 10.

of the larger ones, experienced duplicate gas service during this period: New Orleans, Charleston, S. C., Memphis, St. Louis, Chicago, Buffalo, Detroit, Albany, Providence, R. I., Brooklyn, Jersey City, Harrisburg, Pa., Baltimore, Savannah, Ga., Rochester, San Francisco, and Indianapolis.[8]

Competition was common and especially persistent in the telephone industry. According to a special report of the Census in 1902, out of 1051 incorporated cities in the United States with a population of more than 4,000 persons, 1002 were provided with telephone facilities. The independent companies had a monopoly in 137 of the cities, the Bell interests had exclusive control over communication by telephone in 414 cities, while the remaining 451, almost half, were receiving duplicated service.[9] Baltimore, Chicago, Cleveland, Columbus, Detroit, Kansas City, Minneapolis, Philadelphia, Pittsburgh, and St. Louis, among the larger cities, had at least two telephone services in 1905.[10]

The above examples might be multiplied, but those given are typical of a wide-spread condition. More significant are the results which followed competition. The unavoidable and well-nigh universal verdict has been unfavorable to duplication. Cut-throat competition favored the public for a time with low rates, but invariably at the expense of a deteriorated service.[11] Financial exhaustion of one or more of the companies eventually brought about a complete consolidation, or an agreement as to rates or territory.[12] One method employed, particularly by gas companies, to circumvent destructive competition, was that of agreeing to divide the market. Likewise, new entrants into the field commonly purchased districts from the existing operating companies.[13] Competition which was relied upon to insure for the public reasonable rates and satisfactory service proved to be elusive and non-enduring and failed to measure up to expectations. It continually was disappearing as a result of bankruptcies, consolidations, and formal or informal agreements, leaving in its wake torn-up streets, "dead" wires and useless poles and pipes, enormous overcapitalization, and paralyzed service. Whereupon, the public paid for the competitive folly in high rates to cover dividends on unused, unnecessary investment, and watered stock.[14] Most discour-

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[8] *Ibid.* Also James, E. J., *The Relation of the Modern Municipality to the Gas Supply*, p. 14.

[9] Bureau of the Census, *Telephones and Telegraphs, 1902*, Bulletin No. 17.

[10] New York Telephone Company, *Telephone Competition from the Standpoint of the Public*, 1906, p. 13.

[11] Wilcox, D. F., *op. cit.*, p. 123.

[12] *Investigation by a Joint Committee of the Senate and Assembly of the State of New York*, 1905. The report complained of unity of action on the part of the gas and electric companies in New York City as to rates and quality of service. Cf. Baker, C. W., *Monopolies and the People*, especially Chap. V.

[13] *Competition in Illuminating Gas*, p. 11.

[14] "In Detroit, Michigan, a stringent charter was granted upon the filing of a bond to secure the city against the possible combination of the old company with the new one; but in spite of this iron-clad agreement a combination was effected, and the people were forced to pay not only all the expenses of the gas war and the duplication of works but also a large dividend on an inflated capitalization." Cited in James, E. J., *loc. cit.* Cf. Baker, C. W., *op. cit.*, p. 63; and *Competition in Illuminating Gas*, p. 19.

aging of all were the proceedings such as occurred in Denver where, after a consolidation of all electric and gas interests had been achieved to terminate a hectic situation, a new company shortly appeared and precipitated another war.[15] In some cases the contests became so spirited as to result in street brawls among the workers of the rival organizations, each seeking to prevent the other from installing its distribution system.[16] Sometimes the contesting companies hired agents to solicit business on the street corners from the passerby. It is reported that one telephone company opened a meat market when the owner of a competing shop installed the service of a rival telephone company.[17] Many utility companies were promoted with no purpose other than to discommode the incumbent company and to force the latter to pay a fancy price to regain exclusive control.[18]

The experience with competition was the same in water, gas, electric, and telephone enterprises. Moreover, the same disastrous competition had been suffered in England as well, especially in the gas industry, and the ultimate result was the abandonment of competition as a means of control.[19] But the mere realization of the inefficacy of competition in public utility operation came long before its elimination in this country. Numerous investigations were conducted early in the twentieth century, and in some cases before that. The aim of these investigations was to demonstrate that competition did not achieve its purpose. The one by the Merchants' Association of New York is typical. Rates were shown to be lower, not in the competitive cities, but in those where one uniform telephone system operated. The conclusion of this particular investigation was that "competition in telephone service does not offer a choice of

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[15]Wilcox, D. F., *op. cit.*, p. 143.

[16]Gallon, W. J., "Past, Present, and Future of the Telephone," *Telephony*, Vol. 98 (1930), p. 26.

[17]*Ibid.*

[18]*Competition in Illuminating Gas*, p. 11.

[19]"The competing companies laid their mains in all the leading thoroughfares where there was a large consumption; hence in some streets there were as many as six mains . . . . This state of affairs led to the greatest disorder, and in some instances, whether accidentally or by design, the main of one company was connected with that of another, and by the frequent changes of supply the wrong service would be at times connected so that one company supplied the gas while another collected the payments. It was not an uncommon occurrence for a consumer on entering a house where there were three or more services, to state to the inspector of each company, in turn, that he had arranged to take the supply from the other company, and so kept out of the books of all the companies, and had his gas for nothing, which deception was favored through the secrecy observed by the various competing companies . . . . This competition of companies made them reckless of their respective interests. Canvassers were employed not only to get new customers, but also to induce customers to change their supply to the company represented by the canvasser; and the most extravagant offers were made, which consumers did not fail to take advantage of . . . . Many consumers having driven a hard bargain with the company in the first instance, would report that more favorable conditions had been offered by a rival company and give notice of a change, when that supplying, rather than lose the customer, would consent to the same terms, and thus by the secrecy referred to, observed by the various enterprises, they were imposed on in every way by the unscrupulous portion of the consumers . . . . The result of all these difficulties was that the companies agreed among themselves to cease all competition, to confine their operations to separate districts without interfering with each other; to discontinue all special arrangements and charge one uniform price over all parts of their respective districts."

There were thirteen gas companies operating in London when the companies agreed to cease their rivalry in 1853. In 1860, Parliament officially sanctioned the elimination of competition. Richards, William, *Manufacture and Distribution of Coal Gas:* cited in James, E. J., *The Relation of the Modern Municipality to the Gas Supply*, p. 14.

benefits, but compels a choice of evils—either a half-service or a double price."[20] It was claimed, too, and this no doubt was as true of the other public utilities as of the telephone, that competition resulted in lower rates only because under competition a full return was not exacted for the service. Thus, it was claimed by the Bell interests that the assertion by the independents that they were able to render service more cheaply than the Bell companies was fallacious because the independent operators took no account of depreciation and were able to show a profit only until the time for renewal and reconstruction arrived.[21] The investigations of the gas and electrical industries, such as those previously cited, present figures showing gas and electric rates generally to have been lower in the cities where competition had been banned.[22]

But the acknowledgment that rates really were not lower and service better in those cities where competition was permitted, was not in itself a solution. The problem was to achieve an adequate control over monopoly, assuming its acceptance as the logical type of economic organization, after many investigations reported the common conclusion that to attempt to enforce competition was useless and recommended its abandonment.[23] The thought immediately suggests itself that the problem of that day has come down to the present time. It may be noted that the chaotic competition just described has a present-day parallel in many of our cities, where facilities for local transportation vie with one another with the sacrifice of orderliness and economy in the use of space and resources. The motor trucking industry in recent years also has demonstrated some of the undesirable results of disorderly and uncontrolled development. Nevertheless, many people now advocate that more competition in public utility enterprise is required, not because of its own basic merit, but because no adequate regulatory machine has been set up which is capable of being its successor.[24] The remainder of this chapter will present, briefly, the attempts that have been made to control public utility monopoly by regulation.

The first attempts at regulation, after judicial process through the common law had proved inadequate, were by legislative charter. The initial policy was to make the charters of a special nature, granted by legislative authority in each case.[25] In reality, the special charters were

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[20]Merchants' Association of New York, *Inquiry into Telephone Rates and Service in New York City*, 1905.

[21]American Telephone and Telegraph Company, *Telephone Commission Cases, 1892-1910*, Vol. II, p. 196.

[22]Special attention is directed to Charles Whiting Baker's *Monopolies and the People*, published in 1889. Here is an early treatise on the scope and effects of competition and monopoly, the general merit of which appears to have been overlooked.

[23]City Council of Chicago, *Telephone Service and Rates* (Report of the Committee on Gas, Oil, and Electric Light, 1907). Investigations of like nature resulted in the same denunciations of competition in other cities, for example New Orleans and Cincinnati.

[24]This subject will be examined in Chap. IV, which is concerned with direct competition.

[25]King, C. L., *The Regulation of Municipal Utilities*, pp. 78-79.

often not such at all, being copied from previous grants. It was customary to shorten and simplify the provisions of a franchise by reference to charters that had been granted previously in the same or other states.[26] A high degree of uniformity resulted from the repetition and transcription of the principal provisions, and regulation by special charter soon gave way to regulation by general charter.[27] It is interesting to note that every state went through essentially the same stages in regulatory experimentation. This observation applies especially to railway regulation and legislation; and it is proper to consider here the early regulatory experience in the control of railway enterprise because the methods of control that have been applied to the local public utilities have had their conception in early railway legislation. A few states, such as California, Montana, Colorado, Arizona, and Idaho, benefited from the experience of their sister states by skipping the period of special charters and beginning with general corporation laws.[28]

The abandonment of the special charter was an improvement in that it eliminated some graft and special privileges, but it was not a forward step in regulation. The era of general charter regulation was, in fact, one of full and free competition.[29] The issuance of franchises usually was the prerogative of the municipal governments, and the latter were generally of the opinion that their only protection lay in granting competing franchises.[30] In most of the states, in fact, during the latter half of the nineteenth century and on into the present one, the granting of an exclusive franchise was either unconstitutional or contrary to statutory law.[31] The common policy was to grant franchises to all who applied.

The most glaring weakness of regulation by franchise was that it did not provide a continuous control over the utility companies. Minute details as to rates and services were often incorporated in the franchise, but the results were not effective. Due to advancement in the arts of production, to competition, and to declining prices during a part of the period, maximum rate provisions became a farce, because the companies, in an attempt to enlarge their markets, voluntarily charged less than the prescribed rates.

In an effort to make regulation by franchise relatively continuous and effective in restraining the utilities, the terms of franchises were shortened.[32] This policy served only to add to the complexity of the situation. Conflicting franchises, diversity of termination, and difficulties arising out of the consolidation of former competitors made it impossible to

[26]Meyer, B. H., *Railway Legislation in the United States*, p. 81.
[27]Glaeser, M. G., *op. cit.*, pp. 202-203; King, C. L., *op. cit.*, pp. 79-80.
[28]Meyer, B. H., *op. cit.*, pp. 95-96.
[29]Glaeser, M. G., *op. cit.*, p. 142.
[30]Wilcox, D. F., *op. cit.*, p. 142.
[31]*Ibid.*, p. 15.
[32]Glaeser, M. G., *op. cit.*, p. 221.

determine conclusively the franchise status of the companies.[33] The short-term franchise was a handicap to the companies, also, creating financial insecurity, and making capital wary because of the uncertainty as to whether or not and on what terms the franchise would be renewed. The opposite extreme was the granting of perpetual franchises, but these, like exclusive grants, were unpopular, if not illegal, on the ground that they played into the hands of the monopolists.[34]

Aside from the theoretical weaknesses of franchise regulation which became all too apparent, graft and corruption prevailed. After an early period of promiscuous issuing of franchises based on the conviction that public utility development would be encouraged, it began to be realized that franchises were special privileges and worth money. With this realization the way was paved for bribery and corruption. Even honest local officials could not cope with the situation, for they were incapable of understanding the technicalities of a franchise and negotiated blindly. It is reported that many times the public service company officials were allowed to draw up the franchises to be approved by the public officials who could not fathom the technical implications in the legal phraseology.

Judicial interpretation of charters and franchises as contracts added to the difficulties in the regulation of public utility companies. The court view that a public utility charter or franchise is a contract which may not be impaired arises from the decision in the Dartmouth College case. In that famous case the United States Supreme Court held that a charter granted to an individual or group is a contract which the state may not impair, according to Article One, Section Ten, of the United States Constitution.[35]

As a consequence, state and local authorities often could not change franchise or charter privileges, however ill-considered or antiquated with respect to current needs for regulation they might be. Then it became customary for the states to reserve the power to amend any provision of a charter. This was accomplished sometimes by a clause in each individual contract, in other cases by a general state statute or even by a reservation of power in the constitution of the state.[36] In taking such action, the states took their cue from the separate opinion of Justice Story in the Dartmouth decision, wherein he said, referring to the power of a state to amend a franchise, that "if the legislature means to claim such an authority, it must be reserved in the grant."[37]

The states have not been able, however, to free themselves entirely

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[33] Wilcox, D. F., *op. cit.*, pp. 16-21.
[34] Glaeser, M. G., *op. cit.*, p. 220.
[35] *Trustees of Dartmouth College* v. *Woodward* (1819) 4 Wheaton 518, 643.
[36] *Superior Water, Light and Power Company* v. *Superior* (Wis. Sup. Ct.) 174 Wis. 257, 274-75 (1921). Cf. Buck, S. J., *The Granger Movement*, pp. 209-10; and Glaeser, M. G., *op. cit.*, pp. 206-208.
[37] *Trustees of Dartmouth College* v. *Woodward.*

from the explicit terms of their contractual agreements by a general reservation of power to amend. The Wisconsin Supreme Court, for example, early upheld the power of the state in declaring that "by force of the constitutional power reserved . . . . the rule in the Dartmouth College Case, as applied to corporations, never had a place in this state, never was the law here."[38] Nevertheless, when it was sought to apply a Wisconsin law designed to substitute an indeterminate permit for a public utility franchise, previously granted, the United States Supreme Court upheld the company in its objection, deciding that the obligation of a contract was impaired thereby, "though the corporation was incorporated by special act of the Legislature, under constitution Wisconsin, Article 11, paragraph 1, giving the Legislature the right at any time to alter or repeal such special act."[39]

Hence, despite vigorous effort by the states, abetted by the state courts, it has not always been possible to eliminate undesirable provisions contained in franchises. Effective regulation has been hampered thereby. The state's position has been particularly embarrassing in those cases where exclusive franchises, actual or implied, have been involved, for the authorities then have found themselves in the disagreeable situation of having bargained away their right to allow competition without having retained effective control over rates and service.[40] It is unfortunate when the regulatory power is circumscribed in that fashion; and it is well that such occasions are not as prevalent as they formerly were. Contractual, static regulation is futile when the economic conditions under which the controlled enterprises operate are changing constantly. One of the major problems of regulation has been, and still is, to keep the law upon which regulatory procedure is based in step with dynamic economic conditions in the industries which it is sought to control.

The glaring weaknesses of charter and franchise regulation aroused spirited demand for more stringent and continuous control over public utility activities, particularly as to rates and services. Under term franchises there had been little influential control over rates, less over service requirements, and practically none over discrimination. The creation of the mandatory state commission with the power to prescribe rates and service standards and to prevent discrimination has been the response to the demand for adequate and continuous supervision.

The modern commission which came into being about 1905 was not a new creation however. It grew out of existing problems and out of vari-

[38] *Attorney General* v. *Railroad Companies* (Wis. Sup. Ct.) 35 Wis. 425, 574 (1874).

[39] *Superior Water, Light, and Power Company* v. *City of Superior* (U. S. Sup. Ct.) 263 U. S. 125 (1923), 44 Sup. Ct., Reporter 82. The Supreme Court of Wisconsin previously had decided in favor of the city. *Superior Water, Light and Power Company* v. *City of Superior* (Wis. Sup. Ct.) 174 Wis. 257 (1921).

[40] *New Orleans Gas Company* v. *Louisiana Light Company* (U. S. Sup. Ct.) 115 U. S. 650 (1885); *Los Angeles* v. *Los Angeles Water Company*, (U. S. Sup. Ct.) 177 U. S. 558 (1900); *Detroit* v. *Detroit Street Railway Company* (U. S. Sup. Ct.) 184 U. S. 368 (1902).

ous experiments in regulation. Fact-finding commissions, with emphasis on the power of publicity, had been used in the eastern states since 1830.[41] The Massachusetts Board of Railroad Commissioners, created in 1869, was the most ambitious attempt to control through commission activity relying on publicity as a corrective.[42] Mandatory commissions, as well, were not unknown in the nineteenth century. The Granger movement of the seventies, particularly concerned with railroad control, resulted in the introduction of commissions with mandatory authority.[43] They subsequently fell into disrepute, and were discarded, but it must be acknowledged that both the Granger attempts and the work of the Massachusetts type of commission were of far-reaching importance. The experiments in the Middle West and in the Northeast spread, often in modified form, over the entire country. Moreover, while the early attempts were not especially productive of immediate results, they were the experimental stations in regulatory procedure which bore fruit in later years.[44]

With the early trials as a background, the real test of regulation by mandatory state commissions has taken place within the last twenty-five years. Under their regime, duplication of public utility properties has become exceptional. In 1920, of 925 communities served in the five western states of Idaho, Montana, Oregon, Utah, and Washington, there was competitive electric service in only seventeen.[45] These states being legally and economically not so far advanced as some of the eastern commonwealths, it is possible that competition was more usual then in the nation taken as a whole.

The ascendancy of monopoly has placed increasing stress on the necessity for continuous and vigorous regulation of rates and services. Mandatory state commission regulation has no doubt achieved the above in greater measure than any preceding regulatory experiment. Nevertheless, the results have not been completely satisfactory. The fundamental merit of providing continuous regulation has been offset by the inclination of the commissions to neglect their duties as fact-finding bodies and champions of the consumers and to degenerate into boards of arbitration. The intricacies of intercorporate relationships, inadequate control of interstate operations, the insufficiency of commission power and resources to pursue the facts,[46] and the vagaries of the valuation procedure com-

[41]White, L. D., "The Origin of Utility Commissions in Massachusetts," *Journal of Political Economy*, Vol. 29 (1921), p. 177.

[42]Glaeser, M. G., *op. cit.*, p. 214.

[43]Buck, S. J., *The Granger Movement*, especially Chaps. IV, V, and VI.

[44]". . . . on the whole, it is not too much to say that the fundamental principles upon which American regulation of railroads by legislation has developed were first worked out in the Granger states of the Northwest during the decade of the seventies." Buck, S. J., *The Granger Movement*, p. 204.

[45]Myers, G. L., "Competition in the Public Utility Industry," *Journal of Electricity*, Vol. 45 (1920), p. 311.

[46]It has been estimated that 39 states spent less than $5,000,000 in the regulation of all the local utilities in 1926. Of this total amount, about $2,000,000 was devoted to the control of the

bined with an uncertain judicial attitude toward the valuation question have all weakened the ability of the present scheme of regulation to cope with an ever-expanding monopoly power. There is need for further adjustment. Regulation has not achieved its goal, that of substitute for competition where the latter does not operate economically. Consequently, it will not be surprising to find, in the succeeding chapters, that reliance upon competition, direct and indirect, in the public utility industries is still being urged.

This preliminary survey of commission regulation provides a setting for the subsequent discussion. The problem is to ascertain how well the regulating bodies have used the liberal discretionary powers entrusted to them. The theory of regulation presumes a responsible and energetic agent to put the law into effect and a sympathetic judiciary willing to recognize that regulation is intended to serve the public interest as well as to protect corporate property. It is intended that the following chapters be considered from this point of view, comparing legal control in principle with the regulation of public utility monopoly as it operates in practice.

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electric light and power industry. This sum is plainly inadequate when compared with the vast resources at the disposal of the public utilities, who can shift the cost of defense and investigation onto the consumers in the rates charged. Recent legislation in some of the states, led by Wisconsin, designed to shift the burden of expenditures for rate investigations from the public to the companies accomplishes no real shifting if such expenditures are treated as expenses to be recovered in rates and thus passed onto consumers. Cf. Mosher, W. E., and others, *Electrical Utilities—The Crisis in Public Control*, pp. 9-14.

Chapter III

ECONOMIC AND INSTITUTIONAL FACTORS IN PUBLIC UTILITY MONOPOLY

The preceding chapter showed competition by duplication of properties to be ineffective in the public utility industries. The experience has been that rate wars and unsatisfactory service result eventually in the elimination of competition. The problem of monopoly usually is approached from the standpoint that it gives control over price, and that, as a consequence, ways of curbing the monopoly must be provided. In the public utility industries, however, there is need to consider first why it is that monopoly is an economical way to organize supply.

Economic Basis for Seller's Monopoly in Public Utility Enterprises

With the realization of the destructive results of competition in the public utility industries, there has developed a disposition to consider public utilities as "natural" monopolies.[1] The appropriateness of the term when applied to the monopoly characteristics of public utility industries is challenged here by the observation that monopoly in these enterprises is "natural" only in the sense that circumstances have demonstrated its dominance and superiority under technological conditions which obtain in a given period and that public recognition of this resulted in legal restraints upon entrance of duplicate enterprises into the field. The term has a question-begging implication when applied to public utility enterprise. The inference is that the local utilities are not only inherently monopolistic in their very nature, but that the monopoly is enduring and impregnable. It need only be mentioned that the street railways, and to a lesser extent the other local public utilities, are finding now that their monopoly is not absolute and that the conditions which precipitate monopoly at one time do not necessarily carry over to different social and economic circumstances. They possess a measure of monopoly power, since they generally are granted exclusive privileges in producing their particular products or services. Description of an industry as a natural monopoly lacks the power to convince when it is applied to an enterprise like local transportation which is in a state of ferment, the chief disturbing influence being competition from several means for satisfying the need for transportation.

That public utility enterprise is affected with monopoly characteristics,

[1]Brown, G. T., *The Gas Light Company of Baltimore—A Study of Natural Monopoly.*

often strengthened by legal protection, surely is true. But rather than a designation of these industries as natural monopolies, what is needed is a disclosure of the economic and social factors which explain the existence and extent of monopoly. One of the foremost writers who classifies public utilities as "natural" monopolies has declared further that "whenever there is a decided and continuous increment in gain resulting from combination, we have a tendency to monopoly which will overcome all obstacles."[2] The above conclusion, while probably valid, affords no satisfactory explanation of why any particular industry exhibits this tendency to increased gain. In other words, there is in the statement no complete answer to the important question of why there is special social and private advantage in the monopolistic organization of public utility enterprise.

In seeking a more specific explanation for public utility monopoly, the familiar conclusion is that the existence of decreasing costs primarily is responsible for making competition unstable and self-destructive and monopoly the eventual outcome. In other words, in these industries it is possible to increase the volume of production or service without a proportionate increase in costs. As a consequence, there is a tendency for unit cost to decrease as the amount of business done increases; and conversely, there is a trend towards higher unit cost when the volume of sales drops off. This is the lesson of experience. The problem now is to explain this susceptibility to decreasing cost.

More than any other thing, it is the fact that fixed expenses are large that makes public utility projects subject to decreasing cost. More precisely, it is the predominance of fixed expense over variable costs, rather than the magnitude of fixed cost in an absolute sense, which occasions decreasing cost in public utility enterprises and the tendency toward monopoly. Large "sunk" costs as a cause of monopoly needs modification, moreover, in another respect. Large fixed investment does not make competition ruinous or unstable unless the market for the output of the plant is insufficient to realize capacity utilization.

Fixed or constant costs are great chiefly because a large portion of the total capital is invested in plant or distribution facilities. An indication of the importance of fixed plant, and of the constant costs associated with it, is furnished by the fact that in the public utility industries the turnover on capital is very slow. By way of illustration, in the electric light and power industry in 1922 there was invested $4.31 for every dollar of annual gross income. The ratio for 1927 was 5.01 to 1.[3] In contrast, the corresponding figure for the "average" industrial concern for the period 1914-1921 was estimated to have been $.87.[4]

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[2] Ely, R. T., *Monopolies and Trusts*, p. 63.
[3] Bureau of the Census, U. S. Dept. of Commerce, *Census of Electrical Industries: Central Electric Light and Power Stations*, 1927, p. 18.
[4] Bliss, J. H., *Financial and Operating Ratios in Management*, p. 96.

The situation is portrayed again by considering that in an electric central station with load factor of about fifty per cent, the fixed costs are approximately seventy-five per cent of the total costs and the variable costs of operation are about twenty-five per cent. Obviously, competitive duplication of the fixed costs cannot be compensated for by economies in the variable operating costs. In fact, as will be shown subsequently, if there are duplicate plants in the same market, even the variable costs may be higher because of the lesser efficiency of smaller units. Not only are the fixed plant costs constant with variations in output, but a part of the operating costs are invariable also. This latter fact has received the special notice of writers in the field of railroad transportation.[5] It should be observed, however, that the division between costs that are constant and those that are variable is valid only when a period of time and a range of output are specified. Some costs that are constant for short periods are more accurately classified as variable when the business has increased to a point where additional facilities must be provided or old ones replaced. This is especially true of operating expenses, but it applies ultimately to all overhead costs as well.[6]

The possibility of handling additional business without a proportionate increase in cost applies particularly to the distribution of services such as electricity and gas, since any given equipment can bear an increasing load, within broad limits, especially if the demand can be diversified so that the facilities will be used near capacity at all hours of the day and from one day or season to another. Also, since the cost of distribution becomes greater as the distance between the point of production and the place of use increases, density of service within a compact area is desirable. Hence, competition is wasteful for the reason that concentration or density of service is diminished when there is rivalry between duplicate enterprises in the same area.

It should not be inferred that industries other than the local public utilities (and railroads) do not have any appreciable amount of fixed costs. It is, of course, a matter of degree. And following from that, there is no intent to imply in the above statements that competition works in a perfectly satisfactory manner in all other industries. There are students who contend that the self-destructive nature of competition and the resulting inclination towards monopoly is a universal phenomenon, noticeable in virtually all types of industry.[7] One outstanding contribu-

[5] After a careful analysis of railway expenditures, Professor Ripley reached the following conclusion: "Thus one arrives at the general conclusion that approximately two-thirds of the total expenditure of a railroad and more than one-half of the actual operating expenses are independent of the volume of traffic. The remaining third of all expenditures, or what amounts to the same thing, the other half of operating expenditures, are immediately responsive to any variation in business." Ripley, W. Z., *Railroads: Rates and Regulation*, p. 55.

[6] Cf. Lorenz, M. O., "Constant and Variable Railroad Expenditures and the Distance Tariff," *Quarterly Journal of Economics*, Vol. 21 (1906), pp. 283-298.

[7] Gray, J. H., "The State Abdicates," *Proceedings of the Academy of Political Science*, Vol. 14 (1930), p. 52.
Hicks, H. C., *Competitive and Monopoly Price*. University of Cincinnati Studies, Series 2, Vol. 7 (1911).

tion to economic theory has for its theme the idea that the problem of overhead cost is universal, traceable to the fact that there always is unutilized capacity in some form or other in any economic enterprise.[8] This assertion is based on the proposition that some costs are not proportional to the number of units produced, and to the corollary that perfect proportionality in the combination of the several factors of production is not accomplished. There is an excess or "over-dose" of some of them in relation to the rest. In the public utility enterprises it is fixed capital which normally is provided in excess, placing a special premium on increased utilization and a greater demand. The disproportion is within limits unavoidable, since the provision of the necessary facilities for producing even one unit of service automatically provides a large share of the facilities for providing more, just as when the type is set for the printing of a book or a newspaper. In the same vein, public utilities are precluded from adding to their facilities by exceedingly small increments in perfect step with increases in demand, so that an appreciable part of their constant costs represent excess capacity provided in excess of present but in anticipation of future demand.

Moreover, some of the facilities required for a given scale of output may be fully utilized while others are not. It is difficult to realize maximum utilization of all types of equipment simultaneously at any given level of output. Competition tends to be unstable until the operators have reached the size for maximum efficiency, at which point the incentive to strive for lower costs and further economies by increasing the scale of operations ceases. The indeterminateness of that point in practice, however, may impel an enterprise to commit itself to a policy of indefinite expansion when the cost trends with variations in size are difficult to measure.

A further explanation of the decreasing cost tendency, then, aside from the importance of heavy use of installed capacity, is that economies of large-scale operation are marked in public utility operation under present technological conditions. All public utility enterprise, including even local telephone service, demonstrates in some respects decreasing cost with increasing size. Large generators, transformers, and boilers in the electrical industry cost less per unit of capacity than small installations.[9] Furthermore, large producing units take less room per unit of potential output than do small ones. The economies of large-scale pro-

[8] "There is a deal of complexity in the attempts that are made to trace the untraceable costs or to assign them on some rational basis, or to discover the true added costs of added business, but at the bottom of these complexities lies a fact that is simple. That fact is unused capacity, or capacity of which full advantage is not taken. 'Idle overhead,' that great industrial sin, is simply the expense side of this unused capacity. Our study of overhead cost will be largely a study of unused powers of production." Clark, J. M., *Economics of Overhead Cost*, p. 1.

[9] For a more detailed exposition of this statement, see Lincoln, Paul M., "Relation of Plant Size to Power Cost," *Proceedings of the American Institute of Electrical Engineers*, 1915, pp. 1936-1941. Cf. Watkins, G. P., *Electrical Rates*, especially p. 28; and Jones, Eliot, and Bigham, T. C., *Principles of Public Utilities*, pp. 72-74.

duction are not limited, however, to savings in fixed capital costs, for operating costs, likewise, react favorably to large-scale operations. Large installations are usually more efficient than small, although improvements have been made in the latter in recent years. Large plants can afford to use auxiliary equipment which improves efficiency, and labor-saving devices may effect further savings. A considerable part of labor costs increase in declining ratio with an expanded scale of operations. Large and small generators or furnaces require approximately the same amount of personal attention. A street railway motorman can transport twenty people as easily as five. The usual advantages of specialization of labor, made feasible when the enterprise is fairly large, reinforce the other factors which result in large-scale economies. The difficulty and therefore the legitimate cost of the managerial function probably does not increase as rapidly as the size of the enterprise. Also, management of a public utility enterprise is a less arduous task when monopoly rather than competition reigns, for in the latter case cut-throat rivalry necessitates managerial direction of talented if not high-principled order.[10]

There is one further advantage which accrues from large-scale operation of a public utility, which usually is referred to as diversity. Public utilities must provide their services instantaneously upon demand. This obligation is complicated by the impossibility, or at least impracticability, of storing for anticipated demand.[11] Then, if all of the customers should demand service at the same instant of time, the capacity of the plant would have to be equal to the sum of the demands of all the users. Fortunately, the later does not happen. Not all of the consumers use the service for the same purpose, hence it might be expected that their time of use will never exactly coincide. Even if all the customers utilize the service in the same way, i.e., for lighting or cooking or transportation, their coincident maximum demand does not equal the sum of the individual demands. In other words, there is a diversity factor, which measures the ratio of the sum of the maximum demands of the subdivisions of a system to the maximum coincident demand of the whole system, measured at the point of supply. At this point, the significant feature of the diversity factor is that the greater the number of customers served, and hence the larger the system, the greater the diversity is likely to be. And it follows that the greater the diversity, the greater the quantity of service that can be rendered with a given amount of producing and distributing capacity.

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[10]It is not to be inferred from the above statements that the salaries paid always reflect the lighter managerial burden in monopolistic enterprises.

[11]This does not apply so forcibly to the gas industry as to the other local utilities, inasmuch as it is feasible to provide storage facilities of sufficient capacity to stabilize hourly production for the greater part of the day.

Limits to Decreasing Cost in Public Utility Enterprise

The discussion to this point has shown that monopolistic organization is economical in public utility enterprise because it permits improved service at lower cost. Even in the case of public utilities, however, there are limits to the significance of decreasing cost; and the difference between these industries and other types of enterprise in this respect is after all one of degree. Fixed costs predominate to an unusual extent, complete utilization is therefore more elusive, the economies of large-scale operation are relatively persistent, and the diversity factor increases as more customers are acquired by a system. Decreasing cost operates with special force, and the limits to the tendency are not easily determined. However, to avoid an exaggeration of the applicability of decreasing cost to public utility business and therefore to guard against erroneous commitments as to policy, it is essential to take account of some qualifications to the conclusions so far presented.

It has been suggested above that a public utility must, because of the obligation to furnish service instanteously, provide capacity somewhat in excess of existing demand. But this is to be distinguished from the case where idle capacity exists because of speculative over-expansion or bad judgment of the market potentialities. It is true that under these conditions, if the market does become larger, unit costs will decline, but this would be true of any over-expanded enterprise; and it is a lowering of cost that cannot be attributed to superiority in the monopolistic organization of production. Instead of an example of decreasing cost in the efficiency sense, it is a case of failure to balance reasonably well capacity for service with the demand for service. An inequality between demand and capacity also may be the result of a rate policy that is not consistent with the full use of capacity. If a monopolistic enterprise maintains rates which retard demand, the excess capacity which may result will seem to indicate a condition of potential declining costs. Or a system of discriminatory rates may develop peaks and valleys in demand, and the accompanying uneven use of facilities will seem to present the conditions commonly associated with decreasing cost. But when irregularity or incompleteness in the use of available facilities can be traced to faulty rate policy, the situation should not be confused with decreasing cost which accompanies economical apportionment of factors of production.

References frequently have been made to the long-run trend toward lower cost and rates for public utility services; and it often is implied that such figures support the argument for large-scale economies and decreasing cost. This association of ideas has been particularly noticeable in discussions of the economics of electricity supply. It should be noted that a

decrease in long-run cost is to be expected, unless there is a dependence upon an especially scarce resource, in an industry which affords great opportunity for technological improvements as the demand increases and the industry develops. Some of these gains may be enjoyed only by units of large size, but much of the decline in cost may be attributable to the development of the industry as a whole. New techniques which affect savings may be developed and applied first by a few large systems, but unless artificial restraints are imposed they may be applied successfully later on to smaller enterprises. Examples may be found in water supply, local transportation, and even to some extent in electric service. The same thing happens in other industries, and helps to explain the tendency toward decentralization of industry where it appears. Consideration of the nature and limits of decreasing cost, then, should not overlook the fact that economies are partly external, i.e., due to development and growth of an entire industry or to widespread changes in technology generally, and in part internal, i.e., those which are available only to large units within an industry. The comparative significance of external and internal economies will vary from one industry to another and from time to time with changes in organization and in technology. The essential point is that exclusive emphasis on internal economies will exaggerate the possibilities of decreasing cost with increasing size. Where the external economies are more important, the argument for monopoly *over a large area* in the rendering of public utility service, with huge systems subject to a unified control, is weakened.

It has been so customary to associate decreasing cost with public utility operation that forces working in the opposite direction may be overlooked. In any kind of undertaking, as size increases there will be forces pulling in the direction of both increasing cost and decreasing cost. There are diseconomies as well as economies of size, and only when the latter predominate should an enterprise or an industry be described as one of decreasing cost. There is increased cost involved in extending markets longer distances from the source of resources and production. Electric, gas, and water systems, in common with other industries, meet the limitation of this increasing cost factor. Only when the increasing cost of delivery at points of consumption are outweighed by economies in production and organization on a large scale can an enterprise be placed in the decreasing cost category.

Still other diseconomies of size are likely to appear. The complexities of large size may entail managerial difficulties in coordinating efficiently the various phases and factors of the business with each other, and in extreme cases an unwieldy, bureaucratic organization may develop. Large systems may involve added financial costs which accompany com-

plex financial interrelationships among parents and subsidiaries which have slight operating interconnection. Large public utility systems, tied together only by financial strings, have in recent years spent liberally to defend themselves against legislative action which threatens their continued exercise of power. They feel obliged, in order to protect their position, to cultivate a favorable public attitude by "educational" expenditures designed to convince the sceptical that size and the power which goes with it are compatible with efficiency and the public welfare.[12] Nor can the cost of regulating large monopolistic systems be left out of account. The cost of effective regulation seems unquestionably to be an increasing cost factor. The cost of regulation is, in a broad sense, a part of the cost of service under existing methods of organization and control. Especially if the difficulty and the cost of regulation increases with the size and complexity of the enterprises it is sought to control, that should be considered in analyzing the cost characteristics of the public utility enterprises. It may be that the unwieldiness and complexity of huge corporate systems, and the cost of effective control of their activities, will eventually condemn them on grounds of social inefficiency.

Whether the public utility enterprises should be identified with decreasing cost also requires a consideration of the time element. Decreasing cost tendencies may operate under one set of circumstances at one time, but conditions need not be the same in the long run. In the early period of development, exploitation of a newly discovered resource or improvements in technique stimulated by an eager demand may suggest a strong susceptibility to decreasing cost. But increasing cost may prove to be more fundamental in the longer run. An excellent example is found in the natural gas industry, which is based on a temporarily abundant but basically limited resource. In the not so distant future, the dwindling reserves of gas will bring inevitably a change in cost conditions. The problem of supplying water in metropolitan areas is another case in point. Where a growing urban center must, as time goes on, reach out greater distances for a plentiful supply of water, it does so at increasing cost. And in local transportation, as cities and suburbs grow and become more closely related economically and socially, the cost of transportation service takes an upward curve. Efforts to overcome the disadvantages of greater distances, slower movement, and greater congestion lead to increased expenditures for high-speed travel with the avoidance of traffic dangers. Even though a part of these burdens may be borne by governmental units, which is the present tendency, they have a place in a complete appraisal of the cost nature of the industry.

Business policies followed by public service corporations may give a

[12] Federal Trade Commission, *Utility Corporations*, Part 81A, *Publicity and Propaganda Activities by Utilities Groups and Companies*, 1935.

misleading impression of cost behavior. Private companies have often carefully selected their markets with an eye to profits. When compulsion has not been applied, they frequently have shunned the increasing costs of servicing outlying, thinly populated areas. One can point to the halting development of rural electrification under private sponsorship, to the unwillingness of gas and water companies to extend service to the boundaries of city areas, and to the hesitancy of the Bell telephone system to "invade" the territories of local companies operating in rural communities. By these avoidance tactics, it can be made to appear that as a company develops it does so at decreasing cost. But a policy of "skimming the cream" is not in accord with efficient and complete service by a company operating under the public utility status. It is necessary to distinguish decreasing cost from a situation where costs are held down only because some are avoided. A public utility company that fully meets its obligations must assume considerable costs which the urge for profit tempts it to ignore. When these obligations are shirked, a false impression of decreasing cost in the social efficiency sense is likely to be created. Water companies may cut costs by unsafe processes of purification while jeopardizing public health. Costs may be reduced by cheapening plant construction at the expense of high quality service, by avoidance of expensive but socially desirable underground distributing lines, by continuing in use obsolete and perhaps unsafe equipment as in local transportation, or by exploitation of labor in wage bargains or by failure to provide compensation for accidents (if the law does not intervene), vacations with pay, pensions, and unemployment compensation. These reductions in cost are not a mark of efficiency, however, but are at the expense of the welfare of social groups who are the victims of low standards of business policy. These unprofitable expenditures are likely to be manifested clearly when private monopolies give way to public agencies.

One further point should be clarified. Even when it is observed that decreasing cost does not extend without limit in public utility enterprise, the conclusion does not follow that monopolistic organization should be abandoned or that competitive duplication is desirable from the standpoint of efficiency and economy. Whether increasing or decreasing cost applies, a given area can be served more economically by a single enterprise than by rival companies operating in the same territory. Competitive duplication results in a larger total investment and a higher cost per unit. Combined capacity is greater than the market requires, and neither competitor is likely to reach maximum efficiency in terms of cost and economical use of capital resources. Public convenience also dictates the minimum of pipes, poles, and other distribution equipment necessary for service.

On the other hand, the case for monopoly must also be based on

maximum efficiency, convenience, and social service. It is assumed that the consumers of service will enjoy the results of efficient organization. If the potentialities cannot be realized under private monopoly, efficiency may have to be sacrificed somewhat in order to control effectively the private interests. Monopolistic organization cannot be sanctioned where far-flung systems are created only for the sake of profit.

Wastes of Duplication

Nevertheless, with competitive duplication of facilities each company will be tempted to seek, by rate preferences if necessary, any business which will cover anything more than immediate incremental costs. Equally important, there will be strenuous resistance to attempts by a competitor to wrest business away by the same tactics. The policy will be adopted that any business is worth while which will make some contribution, however slight, to the large fixed costs. There is no real choice between accepting a large loss and a smaller one, even though it must eventually be a losing battle, with financial failure or consolidation as the outcome. In short, when competition exists under these conditions there is no fixed standard of cost as a basis for rates because cost falls as quantity sold rises. This instability and intensity of competition persists until the decreasing cost tendency has been exhausted, i.e., until the average cost curve meets the rising curve of marginal cost—evidence that there is no further advantage to be gained in seeking greater utilization of existing facilities or an enlarged scale of production. Then only is equilibrium in the market reached and maximum efficiency in service realized.[18] Duplication of properties covering the same market area prevents the accomplishment of this end.

The attainment of stability when two or more systems operate within one market is circumvented by the fact that the market area is limited by the cost of extending service to points distant from the source of service or product. Mounting distribution costs place a premium on the intensive development of a restricted market area. Public utility capital is to a high degree immobile and specialized. A heavy fixed investment is no handicap if, when competition becomes too pressing or when demand decreases and prices fall, resort may be had to the production and sale of some other commodity or service or to another market area. The movement of capital in that case, from a low level of earning power to a higher level, is itself competition, broadly conceived according to the principle of substitution. But no such circumstance is characteristic of

[18] There have been attempts to show that equilibrium can be realized in industries which function under conditions of increasing returns, or decreasing costs. See, for example, the following symposium: Robertson, D. H., Sraffa, Pierro, and Shove, G. H., "Increasing Returns and the Representative Firm: A Symposium," *Economic Journal*, Vol. 40 (1930), pp. 79 ff.

the public utility industries. There the capital is immobile and highly specialized,[14] and the introduction of competition compels a fight to the death for the available business. In addition, the obligation of a public utility to continue service until relieved of the obligation by regulatory authority adds to immobility, and makes competition extremely keen when it appears.

Competition is difficult to maintain, again, if the rivalry is between a large and a small system. It is an unequal struggle for the reason that the large company, having access to the economies of large-scale operation, produces at less cost and may have greater financial resources. It may be difficult to induce a competitor even to enter the market against an established system. Setting up in public utility business requires a great initial outlay, and it takes time to develop a market; this also militates against effective competition.[15] Capital is loath to enter into a field where it is likely to be stifled before it has a chance to get a fair start. But once in, there is nothing to do except to contend for the available business. In brief, "the price which will induce new competitors to enter the field is . . . . much higher than that which will lead old ones to withdraw."[16]

That public utilities are industries of increasing returns is sometimes introduced to fortify the contention that competition is uneconomic and non-enduring.[17] It seems, however, that the identification of increasing return with public utilities is only a variant method of expressing the fact that large, incompletely utilized, fixed plant and large-scale economies, with consequent heavy constant costs that do not vary with volume of business, are normal. The phenomenon of decreasing cost occurs when increased output results in the lowering of unit costs by virtue of better utilization or organization of the factors of production. Increasing returns mark an industry when a given quantity of effort (cost) results in a greater amount of yield, again because of better organization or better utilization.[18] When there is a greater output with less than a proportional increase in facilities and costs, the situation may be described

[14]The above does not always apply, as for example in the case of motor bus transportation. In that type of enterprise the equipment is not highly specialized, most of the facilities are not perforce committed to a specific market area, and the fixed costs are not so large relative to the variable expenses as in electric, gas, and street railway enterprises. Restriction of competition in the case of the bus is due not entirely to the need for monopoly in motor transportation, but also to the desire to protect other transportation facilities with which it comes in competition. Cf. Peterson, G. S. "Motor Carrier Regulation and Its Economic Bases," *Quarterly Journal of Economics*, Vol. 43 (1929), pp. 604, 610-611.

[15]This temerity of capital to enter into a competitive public utility field has not been a feature of the telephone industry, no doubt because it does not require an especially large outlay to launch a new company on a small scale. This helps to explain why competition has been unusually tenacious in the telephone industry. Cf. Stehman, J. W., *Financial History of the American Telephone and Telegraph Company*, p. 235.

[16]Hadley, A. T., *Economics*, p. 152.

[17]Cf. Jones, Eliot, "Is Competition in Industry Ruinous?" *Quarterly Journal of Economics*, Vol. 34 (1920), pp. 473, 491.

[18]"The law of increasing return may be worded thus: An increase of labor and capital leads generally to improved organization, which increases the efficiency of the work of labor and capital . . . . Increasing return is a relation between a quantity of effort and sacrifice on the one hand, and a quantity of product on the other." Marshall, Alfred, *Principles of Economics*, pp. 318-319; also p. 397.

either as one of increasing return or decreasing cost. Decreasing cost and increasing return, in other words, are related expressions, and the same may be said of diminishing return and increasing cost. To repeat, it is the existence of costs which are not proportional to output and the possibility of large-scale economies which give peculiar significance to the law of decreasing cost or increasing return in public utility industries and which render competition undesirable from the point of view of enterpriser and public alike.

Because much of the expense of public utility operation cannot be allocated to any particular service such enterprises have been designated industries of joint cost.[19] Whatever this study may have to say regarding the appropriateness of this designation is reserved for a later chapter concerned with rate making.[20] Regardless of the controversy over joint cost, it is certain that the difficulty of assigning costs to specific units of service increases the temptation to place the heaviest burden of charges where the pressure of competition is absent or less insistent, and at the same time to cut rates where competition presses. The opportunity for price manipulation is enhanced by the requirement that each consumer must be connected with the plant. The cost and inconvenience of changing from one service to another renders competition sluggish, and makes it unlikely that competing public utilities ever will be superimposed completely upon each other. Partial monopoly is inevitable in any case, and the tendency under competition will be to place the unallocable or so-called joint costs upon those consumers who are not strictly within the competitive area. Discrimination, therefore, enters as a second evil, which adds to the ruthlessness of the competitive struggle in that portion of the market where the rivalry is most intense.

Attention already has been called to the fact that competition in the public utility industries is limited not only by the cost but also by the inconvenience to the public of unnecessary duplication. The distribution equipment of a telephone, electric, gas, or water utility is extensive, and public convenience demands that no more poles and wires be in the public thoroughfares than are essential. Dug-up streets, too, are a nuisance which public interest requires should be limited as much as possible. Not only is it inconvenient for a consumer to transfer his patronage from one competitor to another, but it places a burden on the general public by virtue of endlessly disrupted thoroughfares. In cities, paved streets make digging costly as well as time-consuming. In local transportation, competitive duplication not only adds to cost but increases traffic congestion in urban centers, and this aggravates a situation that is at best a serious problem.

[19] See especially the controversy between Professor Taussig and Professor Pigou in the *Quarterly Journal of Economics*, Vol. 27 (1912-1913), pp. 378, 535, 687.
[20] Chap. VIII.

In the telephone business there is an additional disadvantage in duplicated service. The value of a telephone to a subscriber increases, in most cases, with the number of possible interconnections that can be made. Complete interconnection under competition would require that each subscriber be connected with the lines of two or more companies, with two bills to pay, or be content with a partial service. It is this fact, in conjunction with the undesirability of parallel facilities in the streets, rather than the tendency to decreasing costs with increasing volume, which is fundamental to the predisposition of the telephone industry to monopoly.

Increase in the size of a telephone system, unless the exchange be very small, requires more than a proportionate increase of interconnecting facilities, with a consequent trend toward increasing, rather than decreasing, cost.[21] That is the conclusion, at least, if the number of subscribers is taken as the index of increased output or service. But the judgment that the telephone industry is one of increasing cost may be reversed if, not the number of subscribers, but the number of calls and the average distance over which communication takes place are used as the basis of cost measurement. The latter probably measure volume of output, communication in this case, more accurately than does the mere number of subscribers attached to the lines. When the number of calls and the average distance over which communication is accomplished are considered in the definition of volume of service, it may be that costs do not increase faster than the size of the system. In that event, it would not be proper to classify the telephone industry as one of increasing costs.[22]

The aim to get good service at the lowest possible price does not seem capable of attainment under competition. The conclusion is the same whether the matter is approached by appeal to experience[23] or to theoretical considerations. Where two competing producers serve the same market for a public utility service, it is almost inevitable that their combined capacity is greater than the market requires. Neither is apt to be producing near the least cost point. Moreover, there is social waste in the duplication of productive resources, where one enterprise can do the work more cheaply in a market area that is limited by mounting costs of distribution. Strenuous efforts to capture and hold business at any rate above prime costs follow. The principle of monopoly has thus been introduced into the public utility industries, and the ideal of one efficient seller has been widely accepted, with the reservation that his power as a monopolist be curbed by regulation of rates and service.

[21] Cf. Wisconsin Railroad Commission, *Reports*, 1916, pp. 348-351, 370-373; also Stehman, J. W., *Financial History of the American Telephone and Telegraph Company*, pp. 235-236.
[22] Cf. Jones, E., and Bigham, T. C., *Principles of Public Utilities*, pp. 85-89.
[23] Chap. II.

The Public Utility as a Buyer

In the preceding pages attention has been focused on the problem of monopoly in selling public utility service. The status of a public utility enterprise with regard to the other side of the market, the cost or purchasing side, has not been subjected to examination. There is now this additional aspect of the relation of competition and monopoly to public utilities to be examined.

It is a self-evident proposition that monopoly control of the selling market does not of necessity carry with it similar command over purchasing transactions.[24] A public utility must buy capital, labor, and materials, presumably in open competitive markets, in order to perform its function. It is subject, if institutional devices of a monopolistic nature are absent, to competitive prices and to changing price levels in its purchasing, like any competitive enterprise, regardless of the exclusive privilege which it holds in its selling operations.

Since by legal authority it is aimed to restrict the public utility monopolist's income, that authority must in the performance of its duty give heed to the cost of public utility operation. Broadly speaking, regulation may be summed up as an attempt to balance income with costs, but it is not to be inferred that a regulatory authority should guarantee a fixed or minimum return. The problem of monopoly control is not so simple, however, if there is reason to investigate the costs themselves in order to be assured that they spring from transactions that are freely competitive. In other words, it must be ascertained whether or not public utilities are favored at all by protection from the normal operation of competition in their buying as well as in their producing and selling of services to the public.

Further consideration of the income aspect of public utility operations, i.e., of the extent to which the public utility operator has control of the market for his services, which is the chief purpose of this study, is reserved for later chapters.[25] The immediate aim is to point out the problems which arise as a result of contact with allegedly competitive cost markets. More specifically, it is intended to indicate the limits to the frequent assertion that on the cost side public utilities function in a freely competitive fashion.

Capital Costs

Public utilities, because of large fixed plant, have as one of the principal elements in cost the return on investment.[26] There has been much

[24] The term purchasing transactions is used here in a broad sense to include all of the expenses that a utility enterprise incurs in its operations. Cost of capital is, of course, included.

[25] Chaps. IV-VIII.

[26] Doolittle, F. W., "Essential Operating Costs," in Lagerquist, W. E., *Public Utility Finance*, p. 418; Dewing, A. S., *The Financial Policy of Corporations*, Chap. VI, Book II, p. 319; Glaeser, M. G., *op. cit.*, p. 109.

ado over the necessity of not regulating too closely the return of public utilities because these enterprises must, like all others, enter competitive markets for capital.[27] The argument is that if the public utilities are not allowed a sufficient return, they will find themselves at a disadvantage in seeking funds in the competitive capital market. The need for an ever-increasing supply of new capital is stressed, and this need is claimed even in those cases where there is no indication of future expansion.

It seems that the sufficient-return-to-attract-capital thesis has been overworked in the case of public utilities. It is very doubtful whether it can be proved that public utilities have been hampered in obtaining capital by a refusal of regulatory authorities to permit an adequate return on investment. There probably is more truth in the observation that public utility regulators have leaned in the direction of liberality, adopting an expedient policy in view of the public interest in the financial well-being of enterprises rendering services so essential. Where particular public utility companies have been unable to command respect in investment circles, the valid explanation is to be found, not in restrictions on the rate of return imposed by regulatory bodies, but in the inability of the public utility to earn a return when permitted to do so. Its deficient monopoly or market position from the selling standpoint is the limiting factor. Regulation can sanction a certain return; it cannot guarantee its acquisition, as many street railway, gas, and railroad companies have learned during the past ten or fifteen years.[28]

It should be considered, also, that control of the market, or virtual seller's monopoly, reduces insecurity of investment, thereby justifying a lower rate of return than in an enterprise subjected to competition with its attendant hazards. Thus, while public utility monopoly supposedly is limited to selling activity, the fact of virtual[29] control of the market operates to make it easier for the public utility company to meet competition in the capital markets. This observation is borne out by the facts, for increasing monopolization of the public service enterprises has been a factor in their ability to sell securities on increasingly favorable terms.[30]

The uncertainty and complexity of the "fair value" doctrine, which is the basis of the present rate-determining policy of regulatory bodies, have caused to be presented various alternative methods of regulation.

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[27]Kirshman, J. E., "The Principle of Competitive Cost in Public Utility Regulation," *Yale Law Journal*, Vol. 35 (1926), p. 805.

[28]*United Railways and Electric Company of Baltimore* v. *Harold E. West et al.* (U. S. Sup. Ct.) P.U.R. 1930A, 225. *Re Wisconsin Electric Railway and Light Company* (Wis.) 1931E, 289, 290.

[29]The adjective "virtual" is inserted to indicate that there is indirect competition from substitute services to be accounted for even in the case of public utilities. Public utility monopolies, it is probably unnecessary to repeat, are never absolute. Cf. Chap. I.

[30]Dorau, H. B., "Public Utility Financing, 1919-1925," *Journal of Land & Public Utility Economics*, Vol. I (1925), pp. 306-321.

Among them is the one which would regulate through competitive investment. The fact that public utilities must enter capital markets in procuring their funds and that the value of their securities is determined in the competitive security exchanges are seen as opportunities to base public utility rates entirely on competitive considerations, the sequence running from the investors' estimate of what the securities are worth to the determination of rates for the service which will realize that estimated necessary return.

> One of the chief results to be accomplished by the method of competitive investment is the restoration of competition in its most desirable and effective form by shifting its basis back in the industrial process from the supply of product, where at best it is not entirely effective, to the supply of capital, where it more properly belongs. Since the market value of securities so regulated cannot depart much from the established value of the investment on which the required earnings are estimated and the rates or prices for the product are based, these prices are held down to a normal value in a much more effective manner than if monopolies were broken up into smaller supposedly competing units. Instead of the prices of products being held to correspond with the cost of investments by the indirect and uncertain effect of the competition of industrial units in the sale of products, the prices of products are held in a direct correspondence with the cost of investments by the competition in the supply of capital to the enterprise among the individuals who furnish it. The results are accomplished by competitive investment, because those in the market who are willing to furnish capital cheapest will make the highest offers for the securities of a corporation . . . . In this way prices would actually be fixed by competition in the money market—a competition far more effective than competition in the commodity market, even among smaller units, could ever be.[31]

This process has been termed "automatic" by its sponsors. In effect, what the competitive investment doctrine would do is to substitute the judgment of the investors for that of regulating bodies as to the worth of a particular service and to encourage the issuance of securities to the maximum limit of the market to yield sufficient monopoly revenue to support them. That the mass of investors is capable of judging either the proper portion of investment that should be applied to the various business enterprises or the value of the product or service which is offered in the market, is doubtful.[32] In fact, the supposition is denied by experience, witness the flow of investment into countless enterprises which do not come up to the hopes and predictions of the mass of investors.[33] It is questionable whether the judgment of regulatory commissions is any more fallible than the so-called "natural" and "automatic" processes of the investment markets in the determination of what the services of an enterprise are worth to the people who buy and use them.

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[31] Blue, F. K., "Automatic Regulation by Competitive Investment," *American Economic Review*, Vol. 5 (1915), pp. 303-310.

[32] Knight, B. K., "Control of Investment Versus Control of Return," *Quarterly Journal of Economics*, Vol. 44 (1930), p. 263; Knight, B. K., "Why Not Regulate Investment Instead of Return?" *Public Utilities Fortnightly*, Vol. 6 (1930), p. 406.

[33] Bonbright, J. C., "Why Not Regulate Investment Instead of Return: An Introductory Criticism," *Public Utilities Fortnightly*, Vol. 6 (1930), p. 406.

Intercorporate Relationships

The maze of intercorporate relationships which has been a striking feature of public utility enterprise detracts in no small measure from the generalization that public utility purchasing operations are freely competitive. Competition covers only those situations where a willing and unattached buyer meets a willing and independent seller. The sweeping investigation of the public utility industries conducted in recent years by the Federal Trade Commission, and reported in more than eighty volumes, discloses a wealth of evidence that the whole stream of public utility transactions from beginning to end has been saturated with monopoly derived from complex intercorporate relationships which facilitate concerted action and unified control.[34]

If it were true that public utilities contract for materials and services under strictly competitive conditions, the task of regulation would be very much simplified. As it is, the commissions have been forced to acknowledge the futility of balancing cost with income, when there exists a noticeable absence of competition in the cost bargains themselves. The situation is portrayed well by the ownership prior to 1925 of over half of the stock of the Electric Bond and Share Company by the General Electric Company, the largest manufacturer of electrical equipment in the country.[35] An investigation by the Federal Trade Commission pointed conclusively to the absence of competitive conditions in the purchasing of equipment by the affiliated companies. The report said that "the most striking feature . . . . is that, after becoming affiliated with the Electric Bond and Share Company, operating companies purchased from 91 to 97 per cent of their generators in use in 1925 from the General Electric Company, as compared with 63 to 78 per cent prior to affiliation . . . . It appears that the companies affiliated with the Electric Bond and Share Company before they became so affiliated purchased a somewhat larger proportion of their generators from the General Electric Company than other privately owned companies. After becoming affiliated they unquestionably threw practically all their purchases of such equipment to the General Electric Company."[36] Identification of a regulated operating public utility with a supply organization by stock ownership, interlocking directorates, or other common interest nullifies the argument that competition governs purchasing transactions or that the public is amply protected.[37]

The holding company providing service or management for a fee is also a common occurrence in the public utility industries. Often there is a tie-up with an investment banking house or an organization which

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[34] Federal Trade Commission, *Utility Corporations*, Parts 72A and 73A.

[35] Federal Trade Commission, *Supply of Electrical Equipment and Competitive Conditions*, p. 98. See also pp. 93, 114, 116, 163, 213-216.

[36] *Ibid.*, p. 100.

[37] *United Fuel Gas Company* v. *Railroad Commission of Kentucky* (U. S. Sup. Ct.) P.U.R. 1929A, 433, 448.

participates in the marketing of the securities.[38] The purchasing organization of a banking house, or of a service organization or holding company, places the orders for materials and supplies for the operating company and charges a fee. Charges are made also for management and for expert advice. The fee which the Associated Companies of the Bell system for many years have been required to pay to the parent American Telephone and Telegraph Company is an outstanding example.[39] Regardless of the exorbitancy of such charges, it is patent that the obligation of all the subsidiaries to pay it, and their inability to resort to any other organization for equivalent service, invalidates the notion that utility operating costs are entirely a competitive matter. It is not uncommon, also, for local operating units to purchase gas or electricity at wholesale when the purchaser and the seller are part of the same organization.[40] In that case, there is an easy opportunity to charge the distributing company excessively, to the profit of the entire utility organization and at the expense of the consumer.[41]

The various holding companies and service organizations do compete with one another to get control of operating units through the holding company device, sometimes paying high prices for the properties and inflating the rate base.[42] One of the main reasons for getting financial control through stock ownership in this way is to prevent competition among service organizations. When it has been brought about that an operating public utility is no longer free to bargain with several service organizations or banking houses, but is bound to one by common control, it is a myth to plead that a utility's monopoly extends only to the sale of its services to final consumers. There is in that case monopolistic unity of action and control over price in the purchasing markets likewise.

Ultimately, public utilities must contend with competition for the factors of production; but it is competition so far removed from the final consumer that he has little assurance that the "costs" of the operating company with which he deals are the result of competitive market valuations. It may be premised that a public utility enterprise is not entitled to revenue from rates which exceeds the amount required to cover legitimate costs necessarily entailed in the performance of the public utility function.[43] Under really competitive conditions in assembling the facili-

[38] State of Pennsylvania, *Report of the House Committee on Investigation of Public Service Commission and Public Utility Companies under Resolution No. 10*, 1931.

[39] The charge is now (since 1929) 1½ per cent of gross telephone revenues. See Federal Communications Commission, *Proposed Report Telephone Investigation*, 1938, Chap. VI. Cf. Stehman, J. W., *The Financial History of the American Telephone and Telegraph Company*, pp. 265-279.

[40] Commonwealth of Massachusetts, *Report of the Special Commission on Control and Conduct of Public Utilities*, 1930, p. 70.

[41] *Re Dayton Power and Light Company* (Ohio) P.U.R. 1931A, 332.

[42] Federal Trade Commission, *Supply of Electrical Equipment and Competitive Conditions*, p. 214.

[43] Out of a recent investigation has come the estimate that residential, farm and commercial consumers of electricity in New York State paid in 1933 $63,339,373 in excess of the cost of serving them. The amount stated would have made possible a reduction of 2.25c per kwh. for residential customers and 2c per kwh. for commercial service. Power Authority of the State of New York, *Report on Cost of Distribution of Electricity*, 1934, p. 31.

ties for public utility service, if that were the case, total costs properly chargeable to service would not be difficult to trace. But cost is not revealed so clearly in the public utility industries steeped as they are in monopolistic arrangements. It is immediately obvious that, under the conditions as they exist, the public has an interest in how and by whom "costs" are determined, if the latter are to serve as a basis for rates which are fair to the public as well as to those having financial interests in these enterprises. A privately controlled company will be tempted to pad costs in an attempt to justify rates which arise out of monopolistic intentions.

When it is held that cost should be a foundation for rates, it is with the important reservation that total cost should be limited to that which is attainable under reasonably ideal conditions. In striking contrast with the practices of many private utilities, this would require: scientific use of natural resources; use of the best available techniques and most economical institutional organization; a management devoted to its social responsibilities; the minimum supply price of capital with manipulative financial risks eliminated; a rate policy conducive to maximum use of facilities; complete coverage of the legitimate market and avoidance of that better served by other means; and, in general, the exclusion of all expenditures not essential to complete performance of the public service obligation.

Divers financial transactions can be employed to cloak spurious and unwarranted costs. Write-ups of capital accounts, accompanied perhaps by purchase and sale of properties among interrelated corporations, afford a profitable method of introducing "costs" into the record to support claims in the application of the legal intricacies of the valuation process.[44] Inflation of the rate base may also be accomplished by resort to the fiction that obsolete equipment constitutes reserve capacity or by mixing manufactured and natural gas to justify inclusion of the old gas plant value in the rate base.[45] Or a company may fail to provide a reserve for depreciation and obsolescence on its property out of net income. Then any income reinvested in the enterprise adds to the fixed capital progressively if there is no devaluation of superseded facilities.[46] Operating expenses may be enlarged by inefficiency or by various service or financial charges exacted by controlling affiliated corporations.[47] Liberal expenditures in rate controversies or to cultivate friendly public relations

[44]Federal Trade Commission, *Utility Corporations*, Part 72A, p. 303; State of New York, *Final Report of the Joint Legislative Committee to Investigate Public Utilities*, 1936, p. 38.

[45]Power Authority of the State of New York, *Report on Cost of Distribution of Electricity*, 1934, p. 295; State of New York, *Final Report of the Joint Legislative Committee to Investigate Public Utilities*, 1936, pp. 61-66.

[46]Power Authority of the State of New York, *Special Report on Electric Companies of the Consolidated System Serving New York City, An Analysis of Their Financial History in Terms of a Rate Base*, 1935.

[47]Federal Trade Commission, *Utility Corporations*, Part 72A, pp. 492, 657-668; Power Authority of the State of New York, *Report on Cost of Distribution of Electricity*, 1934, pp 227, 241, 248.

become added expenses of operation, unless prevented by law and vigilant enforcement thereof.[48] These transactions, and others of similar character, permit monopoly profits in the guise of costs to be shunted from pillar to post within the network of affiliated companies, thus defeating the intent of regulation to protect consumers of service from exorbitant charges.

Fuel Clauses

The rapid increase in prices during and after the Great War moved the public utilities to seek a method to keep rates in line with rising costs which would be quicker in its action than the slow procedure of commission hearings and a possible calculation of fair value.[49] The most noticeable price increases, as they affected the utility companies, were those associated with materials, especially fuel, and labor. It became popular, therefore, to provide in utility rate schedules that rates might be raised automatically in response to specified increases in fuel costs or labor costs.[50] The fuel surcharge, briefly, is a method of protecting utilities from competitive changes in the cost markets by a quick adjustment of income to such cost variations. Most of the commissions were willing, during this period, to recognize the legitimacy of such charges.[51] The public utility companies have not been heard to plead so strenuously for the necessity of adjusting rates to cost during periods of declining prices.

The propriety of fuel clauses has been claimed particularly with respect to rates for large users. Rates for such consumers are usually established at a very small margin above cost, so that even a moderate increase in expenses turns a profitable industrial contract into a losing proposition. The importance of fuel costs in the total expense of serving a large user is a further argument in favor of a coal rider attached to the rate schedule for that class of business.[52] For example, practically all railroad electrification contracts carry fuel surcharges.[53] The fuel clause makes provision for the fact that the variable element in the expense of serving a large consumer comprises a much greater percentage of the total cost of service than in the case of the small consumer

[48] State of New York, *Final Report of the Joint Legislative Committee to Investigate Public Utilities*, 1936, p. 73.

[49] Busby, L. A., "Regulation of Public Utilities," *Electric Railway Journal*, Vol. 46 (1915), pp. 1081-1084; *Re Georgia R. and P. Company* (Ga.) P.U.R. 1921A, 176.

[50] The fuel clause, or surcharge as it is sometimes called, has been more frequently used than the wage clause. Therefore, only the former will be discussed, although it is to be understood that wage clauses, with similar purposes in mind, sometimes have been attached to rate schedules.

[51] *Re Alton Gas & Electric Company* (Ill.) P.U.R. 1917F, 12; *Re Rockingham County Light & Power Company* (N. H.) P.U.R. 1917F, 24; *Re Lynchburg Traction & Light Company* (Va.) P.U.R. 1921E, 87. The New York Commission has not favored fuel and wage clauses, although there have been many instances of their use in that state. *Re Rochester Gas & Electric Corporation* (N. Y.) P.U.R. 1921A, 415.

[52] *Re Marion Light and Heating Company* (Ind.) P.U.R. 1918D, 692; *Re Union Electric Light & Power Company* (Mo.) P.U.R. 1918E, 508; *Public Service Commission* v. *Consolidated Gas, Electric Light and Power Company* (Md.) P.U.R. 1919A, 66; *Re Litchfield Water Supply Company* (Ill.) P.U.R. 1920D, 332.

[53] *Electrical World*, 1929, p. 883. In 1929, ten out of a total of fourteen contracts for electric power between railroads and central stations contained fuel clauses, providing usually for monthly or quarterly adjustments.

where the current consumed and consequently the variable expenses are small and the fixed costs are comparatively greater.

Another justification for the fuel clause, mentioned by some of the commissions, is that most rates for large industrial users allow for the possibility of an isolated plant or the use of some other form of energy. It is reasoned that with an increase in the cost of fuel, the cost to the industrial customer of providing himself with energy from some other source is increased likewise, and on the basis of mere competitive considerations the large user should pay more. Moreover, in a period of declining fuel prices the central station, if it does not decrease industrial rates in sympathy, stands to lose patronage. In brief, as the cost to a public utility of serving a large consumer increases, so also does the value of that service to the consumer increase; and as the cost to a public utility decreases, the value of the central station service decreases. The reason is that fuel cost is a major part of the total expense when use is large, and as the cost varies for an electric or gas central station so also does the cost to the consumer of providing himself with energy from some other source change. This holds true, of course, only when the same fuel is assumed to be under consideration by both the public utility and the industrial consumer. But even though that should not be the case, it is likely that all fuels would have price oscillations somewhat in sympathy with each other. The prices of substitute commodities and services tend to move upward and downward together not only in the case of public utility services, but for commodities and services in general. The California gas companies, which use oil as a basic fuel and also find in oil a major power and heat competitor, have very successfully applied this method of keeping in step automatically with changes in the competitive fuel situation.[54] Public utilities and commissions in other states also have accepted the fuel clause as a suitable device for this purpose.[55]

Recently, the use of fuel clauses has been challenged. They have been criticized as discriminatory against the small consumer, whose coal cost is almost negligible.[56] The increased efficiency in the use of coal in the production of electricity has meant that a surcharge provision of several years' standing has realized for the company considerably more increased revenue than the increased cost of fuel would warrant. The public utilities have urged the use of a fuel clause not only as an automatic adjustment for fuel price variations, but also as a rough index of changes in

[54]Mott, A. G. (Chief Engineer, Cal. R. R. Comm.), "A Fuel Price Clause in Rates for Domestic and Commercial Gas Service," *American Gas Journal*, Vol. 130 (1929), p. 45.

[55]*Re Milwaukee E. R. & L. Company* (Wis.) P.U.R. 1918A, 798; *Re East St. Louis L. & P. Company* (Ill.) P.U.R. 1918B, 327; *Re Public Service Company of Northern Illinois* (Ill.) P.U.R. 1924B, 388.

[56]The coal clauses usually provide that customers' bills shall bear a percentage increase or decrease for a stipulated change in the price of coal. *Re Bridgeton Electric Company* (N.J.) P.U.R. 1917F, 205.

other costs. It is claimed that the New York Edison Company in the period 1920-1928 collected from consumers under the guise of the coal surcharge $29,000,000 in excess of the increased cost of coal.[57] The point is well made that it should not be necessary to base utility rates on such a crude index.[58] Nor is there any reason for public utilities to be protected against every fluctuation in costs.[59] If it be contended that the violent price fluctuations during and after the war made speedy adjustments in rates necessary, the answer is that such an emergency condition has now passed.[60] In fact, when price levels are declining, fuel clauses will not be so popular with the private companies, except where their use is indispensable to the retention of business. The similarity in result between the fuel clause, when it is used to offset changes in all costs and not merely those in fuel, and the service-at-cost plans, widely used in the reconciliation of cost and income in the electric railway business in recent years, is apparent.[61]

More serious than the charge that a fuel clause gives a public utility undue protection and that it paves the way for shady practices is the indictment that the regulating commission is relieved illegally of its duty to justify and approve all public utility rate changes.[62] The fuel clause as a competitive device becomes another method of undermining rigorous public control through commission supervision over rates. The conclusion is that fuel clauses should be limited to adjusting costs for fuel only, and that their application is unwarranted except in the case of large users where even a fairly small increase in fuel prices would wipe out the thin margin of profit usually realized on such business. In any case, the fuel clause is properly a measuring device to be used by the regulatory commission in its rate supervision. It should not be a substitute for commission regulation.

Appliance Merchandising

A study of the competitive and monopolistic aspects of public utility activities would be incomplete were attention not called to the merchandising of appliances. The distinguishing feature of this appliance competition is that it is voluntary on the part of the public utility. An electric company or a gas company is under no legal obligation to sell appliances; it is not under any compulsion when it competes in this field.

Even the right of a public utility to engage in merchandising without explicit charter permission to do so has been challenged, but in the leading case on the subject, the Pennsylvania Supreme Court decided that

[57] New York Report, 1930, pp. 112, 295.
[58] *Rockport v. Clifton* (Mo.) P.U.R. 1927E, 470.
[59] *Re Van Brunt St. & E. B. R. Company* (N.Y.) P.U.R. 1919E, 723.
[60] *Re Muncie Electric Light Company* (Ind.) P.U.R. 1917F, 23.
[61] Morgan, C. S., *Regulation and Management of Public Utilities*, pp. 188-233.
[62] *Re Rockford Electric Company* (Ill.) P.U.R. 1917F, 196.

selling of appliances is a necessary incident to public utility business.[63] On the other hand, two states (Kansas and Oklahoma) have prohibited by law the right of a public utility to engage in the selling of appliances.[64] In nine other states there was unsuccessful agitation in 1931 for similar legislation, fostered by the American Bureau of Commerce.[65] Anti-merchandising bills appeared again in eleven state legislatures in 1935, but all failed of enactment.[66]

It is the independent dealers who vigorously oppose the invasion of the public service corporations into the merchandising field. Their complaint is that the utility competition is unfair, because the public utility sells below cost and recoups losses from consumers by charging higher rates.[67] To this chief grievance is added the lament that extensive and loose credits, allowances for old appliances, free service, and free installations offered by the public utilities put the independent merchandiser in a hopeless competitive position. The practice of the public utilities in collecting for appliances by adding the installments to the regular monthly bill for service, implying that the latter will be discontinued unless the appliance payments are made when due, makes collection easy and loss from bad debts slight. The independents see in this another form of unfair competition.[68]

The non-utility dealers have been greatly incensed at public utility practices such as selling or giving away kitchen cabinets, mops, brooms, and cooking utensils in their appliance promotion schemes.[69] The retailers demand that the public utilities be confined rigidly to the rendering of service.[70] They do not propose to permit utility participation in appliance selling under any conditions, maintaining that it is not the practice but "the opportunity for unfair competition which is at issue."[71] The independent dealers want to know by what right the public utilities sell appliances, since the railroads have been barred from the coal business.[72] It does not seem to be quite to the point, however, to compare the opera-

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[63]*Commission* ex rel. *Baldridge* v. *Philadelphia Electric Company* (Pa. Sup. Ct.) P.U.R. 1929D, 335; Welch, F. X., "When a Utility Company Merchandises," *Public Utilities Fortnightly*, Vol. 7 (1931), pp. 67, 70.

[64]Doying, George E. "What State Lawmakers Have Done for and to Regulation in 1931," *Public Utilities Fortnightly*, Vol. 8 (1931), pp. 723, 731.

[65]*Ibid.* The nine states are Missouri, Alabama, California, Illinois, Indiana, Nebraska, Nevada, Pennsylvania, and Tennessee.

[66]Doying, G. E., "The 1935 Utility Legislation throughout the States," *Public Utilities Fortnightly*, Vol. 16 (1935), p. 531.

[67]Soule, L. S., "They Sell Appliances Now—What Next?" *Gas Age-Record*, Vol. 66 (1930), p. 306. Reprinted from *Hardware Age*, August 14, 1930.

[68]"The Unfair Competition of the Public Utilities," *Gas Age-Record*, Vol. 66 (1930), p. 304. Reprinted from the August 1, 1930, issue of the *Plumbers and Heating Contractors Trade Journal*.

[69]Clark, N. M., "When a Utility Company Merchandises," *Public Utilities Fortnightly*, Vol 7 (1930), pp. 140, 143.

[70]The bitter feeling of the independents is indicated by the following passage: ". . . . Public Utilities should be kept out of the appliance merchandising field . . . . they have their own particular field—the generation and sale of gas and electricity—and had better stop crawling under fences to stick knives in the backs of neighbors who are trying to conduct a legitimate business in a legitimate . . . . way." "The Unfair Competition of the Public Utilities," *Gas Age-Record*, Vol. 66 (1930), p. 304.

[71]Soule, L. S., *op cit.*, p. 306.

[72]*Gas-Age Record*, Vol. 66 (1930), p. 304.

tion of mines for the sale of coal by the railroads with the sale of appliances by the local utilities. A railroad has complete facilities for rendering transportation service without any commercial participation in the coal industry. But a public utility cannot sell electricity unless there are appliances installed. They are a part of the system essential to electric service, just as are the wires or pipes leading to the house.

In rebuttal, the utilities have pointed to the disorganized marketing facilities for appliances, the lack of salesmanship, and the installation of equipment of inferior quality by the independent dealers. The gas and electric companies call attention to the successful control of appliances by the American Telephone and Telegraph Company as an indication of the natural union of the service and appliance businesses.[73] The implication is that public utilities have entered the merchandising arena in their own defense.[74] The public utility organizations have voiced a desire to abandon merchandising as soon as the other dealers can guarantee that prices and quality of appliances will be such as to promote their wide usage.[75] Charges of cut-throat competition have been met by expressions of willingness to co-operate with the other retail outlets in putting the business on a fair basis.[76]

The crux of the matter is whether or not a utility shall be privileged to sell appliances below cost and recoup losses by capitalizing them or by charging them to operating expenses. The public utilities emphasize the promotional aspect, namely, that appliances and service are complementary goods, and that from the standpoint of the consumer the demand is a joint one. Hence, it is as necessary that the price and quality of appliances be satisfactory to the consumer as it is that the rate for the service itself be promotional. As a part of their program to develop the domestic load, the electrical and gas utilities have urged that the merchandising department is properly a promotional department, and as such should not be required to be self-supporting.[77] The argument that appliance losses are recovered through rates for service is answered by pointing to the decreased costs and lower rates which result from the expansion of business made possible by cheap appliances.[78] In other words, they say, it is a question of taking a small loss, if necessary, in order to register a large gain.

The weight of authority, however, has been against the utilities' treatment of appliance losses as an operating expense of the service business. The commissions in Idaho, Illinois, Missouri, Montana, Michi-

[73] The telephone companies do not sell appliances however; they rent them.
[74] *Electrical World*, Vol. 95 (1930), p. 407.
[75] Acker, E. R., "Co-operative Merchandising," *American Gas Association Proceedings*, 1929, p. 428.
[76] *N.E.L.A. Bulletin*, April, 1930, p. 231.
[77] Dorau, H. B., "Appliance Merchandising Policies and the Future of Gas," *Gas Age-Record*, Vol. 61 (1928), p. 343.
[78] *Proceedings of the American Gas Association*, 1929, p. 422.

gan, Nebraska, New Hampshire, North Dakota, Pennsylvania, Utah, Washington, and West Virginia have held that merchandising is not strictly utility business under the law, and that the merchandising accounts, therefore, must be segregated.[79] The Wisconsin legislature recently passed a law to the same effect, so that the commission might not be in doubt as to proper procedure.[80]

The conclusion is that the public utilities justifiably are interested in the existence of efficient appliance outlets, and that, if by participation they would promote appliance sales, the privilege ought not to be denied them. But that appliances may be sold at any price which will get them into the homes has not gained the approval of most commissions and courts. And in their decisions on this point, the regulators rightly have been interested primarily, not in the independent dealers who may be damaged,[81] but in the consumer who may be inveigled into installing appliances with the bait of unusually low prices, only to pay the full price, indirectly, through rates for service.[82]

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[79]Welch, F. X., "When a Utility Company Merchandises," *Public Utilities Fortnightly*, Vol. 7 (1931), pp. 67, 73.

[80]In Kansas, before public utilities were barred from the merchandising field in 1931, the State Supreme Court overruled the Commission in justifying appliance losses as operating expense when it results in a substantial amount of new business. *Wichita Gas Company* v. *Public Service Commission* (Kan. Sup. Ct.) 268 Pacific 111, P.U.R. 1928D, 124.

[81]As a matter of fact, that is not the concern of the public utility commissions, but of the Federal Trade Commission.

[82]Discussion, in Chap. VIII, of the undesirability of over-promotion involves this matter again.

CHAPTER IV

DIRECT COMPETITION

The preceding chapter was concerned in part with examining the contention that public utilities are best operated as seller's monopolies. The present chapter will seek to determine the extent to which the monopoly form of organization has been encouraged in the production and sale of public utility services up to the present time. The emphasis is on commission policy under the law regarding public service corporations and on the processes of regulation, rather than on a specific recital of the localities where direct competition or protection from it exists.

The term direct competition, for the purposes of this investigation, covers the entire production of a given service from whatever sources derived, when those sources may be said to be competing with each other.[1] For example, electric energy may be produced under competitive conditions by two privately owned public utilities, by a privately owned utility and a municipal plant, by a mutual company[2] and a public utility, or by a public utility and an isolated private plant. The comparison of rates between localities ordinarily considered separate market areas is likewise discussed under this heading. Such comparisons are sometimes influential, it has been held, in determining the location of industry; and rate comparisons are used by regulating bodies in their attempts to ascertain reasonable rates.

LAW AND COMMISSION POLICIES FAVOR MONOPOLY

In the industries covered by the term local public utilities, competition between two or more public service corporations operating within one market area is no longer the typical case. Chapter II sketched the history of public utility organization from the early days of unrestricted competition, through the experimental periods of regulation, to the present situation where commissions with mandatory powers are the rule. With the spread of state commission regulation, the reliance upon competition as a regulating force diminished. Regulation by law through public utility commissions practically has superseded regulation by competition

[1]This use of the term direct competition has been adopted because it offers the most convenient approach to the problem of competition in public utility industries. The following chapters are reserved for the treatment of indirect competition, more specifically, all cases where several non-identical but similar products or services competitively seek to satisfy the same demand. As an example, wood, coal, oil, gas, and electricity offer several ways of providing heat and power. Apart from the consideration of convenience of treatment, the division made here between direct and indirect competition appears logical, for the nature of the product or service is more fundamental to the question of whether competition is direct or not than is the source of that product or service. Cf. Chap. I.

[2]The designation "mutual company," employed here in its usual meaning when applied to a business undertaking, refers to that type of organization which is essentially a consumers' cooperative association, the owners of the enterprise being the same individuals who use the product or service.

between two utilities, it having "become the settled conviction of most of the states that the regulation of public utilities through competition among them has been a failure; that competition among public service corporations has been and is wasteful, unscientific, and uneconomical; that unbridled competition among public service companies results only in injury and loss to the general public and in most instances to the owners of the utilities."[3]

Remnants of the competitive regime remain. Only Delaware has no regulatory commission at all. Public utility commissions have some control over interurban electric railways in all but two states; over street railways in all but three; over motor buses except in one state; over electric light, heat, and power utilities in all but seven; over natural gas distributing units in all but six; and over manufactured gas utilities in all except eight states. The scope of commission control over the several types of public utilities varies greatly in the various states, and the existence of a commission is not conclusive evidence that competition has been scrapped entirely.[4] In some of the states where state commissions lack broad powers, control of public utility enterprises is still vested in the municipalities, and the city authorities determine whether competition or monopoly shall prevail and in what manner the one or the other shall be controlled.

Where monopoly is not the accepted policy of a state, an attempt by a public utility to eliminate competition makes it liable to prosecution under anti-monopoly and restraint-of-trade statutes.[5] That states have the right to make anti-trust acts applicable to public utilities as well as to other types of business is well established.[6] In the absence of specific exemption, it is likely that a court would hold a public utility liable for the infringement of anti-monopoly law, as was done by the Nebraska Supreme Court.[7] Hence, in the absence of commission power to restrain it, competition can be the source of much trouble in the present day. But in the event that public utilities have been made responsible to a public service commission, it has been decided that state anti-trust laws no longer apply, regardless of whether or not such statutes specifically

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[3] *Re Himburg* (Mich.) P.U.R., 1922C, 422.

[4] Bonbright & Company, Inc., *A Survey of State Laws on Public Utility Commission Regulation in the United States* (2d ed.), 1930, p. 11.

[5] "Any person or corporation who shall monopolize or attempt to monopolize or combine or conspire with any other person or persons to monopolize any part of trade or commerce in what is commonly known as electricity within the state of Nebraska, and also, when engaged in the business of producing, selling, or distributing the same, shall enter into a contract, combination, or conspiracy to, or who shall give direction or authority to, do any act for the purpose of driving out of business any other person engaged therein, or who for such purpose shall in the course of such business sell any article or product at less than its fair market value or at a less price than it is accustomed to demand, or receive therefore in any other place, under like conditions, is within the prohibitions of sections 3448, 3449, and 3453, Comp. St. 1922, and such acts are in contravention of the public policy established thereby." Headnote by the court. *State* ex rel. *Spillman* v. *Interstate Power Company* (Nebr. Sup. Ct.) P.U.R. 1929E, 358.

[6] Cf. Spurr, H. L., "Public Utility Mergers and the Law," *Public Utilities Fortnightly*, Vol. 4 (1929), pp. 451-468.

[7] *State* ex rel. *Spillman* v. *Interstate Power Company*.

exempt them. It is reasoned that the state by its action providing for regulation of rates and service, the requirement of a certificate of convenience and necessity, or the commission approval of consolidation abandons the enforcement of anti-monopoly laws in this field.[8]

Commissions lacking the power to prevent competition in the public utility industries have often deplored their impotence in this respect. Moreover, they have sometimes made their influence felt by appealing to municipalities not to grant competitive franchises. But the commissions have no coercive powers in such cases, and are limited to exposing the undesirable consequences of competition. To illustrate the above situation, the Montana Commission recently found itself powerless to prevent duplication of natural gas companies when "promises of competition and a 15-cent natural gas led citizens of these communities to approve the granting of the franchises." Following a description of the competitive battle which ended disastrously, the commission added that "while this commission thoroughly disagrees with the policy of competition between public utilities because it is our experience that the system is productive of waste and disorder and is economically unjustified, we are a creature of the legislature and responsive to its will. . . . . We have on numerous occasions counselled cities and towns of the general unsatisfactory results that flow from admitting competing utilities in small communities, but we have not and will not attempt to coerce them."[9] In other states, Pennsylvania, North Dakota, and South Dakota among them, the commissions have criticized competition, have reproved cities permitting it, but at the same time have admitted their inability to eliminate it.[10]

Not all states, to repeat, have placed a ban on competition. In fact, as will be revealed subsequently in this chapter, the certificate of convenience and necessity, the chief instrument in the restriction of competition, is employed in only a bare majority of the states. Moreover, not all of these apply it to all of the local public utilities. The more developed states do have anti-competition laws, however, and the trend is very definitely in the direction of disapproving competition between two or more private companies.[11]

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[8] *Continental Securities Company* v. *Interborough Rapid Transit Company* (U. S. Circ. Ct.) 221 Fed. 44, P.U.R. 1915D, 38, 40; *Tennessee East Electric Company* v. *Hannah* (Tenn. Chancery Ct.) P.U.R. 1928D, 51; *Re Central Indiana Power Company* (Ind.) P.U.R. 1930D, 65, 84-88; *State* v. *Inland Forwarding Corporation* (Wash. Sup. Ct.) P.U.R. 1931E, 394.

[9] *Re Bowdoin Utilities Company* (Mont.) P.U.R. 1931B, 20.

[10] *Bondholders of Allegheny Valley Water Company* v. *Borough of Tarentum* (Pa.) P.U.R. 1915C, 174; *Cilley* v. *Kennebec Telephone Company* (S. D.) P.U.R. 1915F, 839; *Public Service Commission* v. *Blue Flame Gas Company* (Mont.) P.U.R. 1926D, 314; *Electrical World*, Vol. 89 (1927), p. 933.

The Iowa commission, also, has no jurisdiction over the duplication of properties, but apparently is not greatly concerned about that, for it is on record with this statement: "The general policy of this state has been to foster competition and to prevent exclusive rights and monopoly. This state has not yet adopted the policy that a regulated monopoly is better than free competition between as many persons and corporations as may be inclined to get in and try their luck." *Schmidt Bros. & Company* v. *Citizens of Clayton County* (Iowa) P.U.R. 1916C, 49.

[11] The subject of competition between private companies and municipal enterprises is discussed in the following chapter.

Whether a state shall promote or restrict competition is, of course, a matter of law. A commission cannot run directly counter to the expressed policy of the people, decreed in constitution or statute, though commissions have found it possible in one way or another to expand upon the letter of the law and thus add to their powers. But no matter how explicit the statutes may be, there will always be need for judgment and discretion on the part of the regulating bodies. The states, for the most part, charge the commission with deciding when the admission of a competing utility is advisable. It is to be expected that the commissions would set up for themselves general standards to be followed in their attempts to meet this responsibility. First of all, then, it has been decreed by the commissions, and reiterated by the courts, that the public interest is the fundamental consideration. All else must give way to the requirement that the policy be followed which will, in the long run, result in the best service at the most reasonable rates. The public interest has been found to be associated, within limits, with the monopoly form of organization. The long-time welfare of the public has been emphasized, and it has been a major criticism of competition that while it may be in harmony with the public interest for short periods of time, its eventual result must be cut-throat tactics, deteriorated service, and forced consolidation, with a consequent heavier burden of charges on the consumer.

The Investor's Interest

It has been contended by and for the utilities that not only must the public welfare be consulted[12] in considering whether to admit competition, but that the utility investors' interests must be regarded also.[13] The authorities in the various states have not been all of one opinion in this matter.[14] There has been a general recognition that the public interest is bound up with that of the investor insofar as a utility financially healthy will be in a position to render better service than one unable to earn a reasonable return. But that is scarcely the equivalent of placing the interests of the consumer and of the investor on a par with each other. No doubt, attention by the commissions to the investors' interests is due to a great extent to the widespread ownership of utility securities among people of limited means, often customers and employees of the company, and among trust companies, banks, and insurance companies.

It has been argued by the utilities, also, that the possession of monopoly is a property right of a public utility which cannot be infringed without invoking the "due process of law" clause in the Federal Con-

[12] *State* ex rel. *Athinson* (Mo. Sup. Ct.) 275 Mo. 325, 204 S. W. 897, P.U.R. 1919A, 343, 351; *Re Highway Transportation Company* (Ind.) P.U.R. 1926D, 594.

[13] *Re Any-Where-For-Hire Carriers* (Ore.) P.U.R. 1928D, 427; *Re Colorado Gas and Oil Pipe Line Company* (Colo.) P.U.R. 1925A, 508; *Re Phoenix Water Power Company* (Ariz.) P.U.R. 1916C, 239.

[14] *Ibid.* Also, *State* ex rel. *Athinson*, *supra*.

stitution.[15] That contention has never been concurred in by a commission or court; it has frequently been denied.[16] A leading case on this point has been interpreted as conferring upon a public utility a right to monopoly.[17] The Frost case, however, does not turn on the point whether a utility has a constitutional right to protection from competition. The Supreme Court there decided that a certificate from a state commission was an exclusive privilege only "against any person attempting to operate . . . . without obtaining a permit."[18] The Supreme Court did, however, place the burden of proving the need for a second utility on the commission when it said: "If the proviso dispensing with a showing of public necessity on the part of the Durant and similar companies is invalid as claimed, the foregoing principles afford a sufficient basis for the maintenance of the present suit, against not only the Durant Company, but the members of the Commission, who threaten to issue a permit for the establishment of a new gin *without a showing of public necessity.*"[19] (Italics by the author.) It is possible, too, that the pronouncement of the courts that confiscatory rates cannot be imposed upon public utilities has been translated, erroneously, into the belief that public utilities must be protected from competition which would make the attainment of a reasonable return impossible.[20]

On the other hand, the due process clause has been employed also in an effort to prove the right of an applicant to enter a field already occupied. The courts have settled the point in connection with public conveyances by describing the use of the public highways as a special privilege which the state under its police power may grant or withhold without violation to the "due process" and "equal protection" clauses of the Constitution.[21]

In brief, while the commissions should have regard for the investors' interests, the basis for it must always be the ultimate public interest. The protection given the public utility owners is incidental. The attitude of a commission towards its duty has a bearing upon the reasonableness of protecting the investor. If regulating bodies actively champion the con-

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[15] *Re Turner Light & Power Company* (Me.) P.U.R. 1916A, 418.

[16] *Re Wilkes-Barre Light Company* (Pa.) P.U.R. 1917E, 367; *Re Burlington Transportation Company* (Neb.) P.U.R. 1929C, 632; *Frost* v. *Corporation Commission* (U. S. Sup. Ct.) 278 U. S. 515, 49 Sup. Ct. Rep. 235, P.U.R. 1929B, 634.

[17] *Public Utilities Fortnightly*, Vol. 3 (1929), p. 355.

[18] "While the right thus acquired does not preclude the state from making similar valid grants to others, it is, nevertheless, exclusive against any person attempting to operate a gin without obtaining a permit or, what amounts to the same thing, against one who attempts to do so under a void permit; in either of which events the owner may resort to a court of equity to restrain the illegal operation upon the ground that such operation is an injurious invasion of his property rights. The injury threatened by such invasion is the impairment of the owner's business, for which there is no adequate remedy at law." *Frost* v. *Corporation Commission* (U. S. Sup. Ct.) 278 U. S. 515, 49 Sup. Ct. Rep. 235, P.U.R. 1929B, 634, 639.

[19] *Ibid.* The Court observed, also, that a mutual company, according to its interpretation of Oklahoma law, is not exempt, by its nature, from the law requiring a certificate to legalize operation.

[20] *United States Light & Heat Corporation* v. *Niagara Falls Gas and Electric Light Company* (U. S. Dist. Ct.) 23 F (2d) 719, P.U.R. 1927E, 749.

[21] *Packard* v. *Banton* (U. S. Sup. Ct.) 264 U. S. 140; *Re James* (Vt. Sup. Ct.) 132 Atl. 40, P.U.R. 1926C, 325.

sumers' interests in rate matters, a high degree of monopoly protection to the one utility already in the field is defensible. But if the commission assumes a judicial attitude, limiting its activity to arbitrating disputes brought before it by one of the parties, more recourse must be had to competition, for the unorganized consumers have little power to hold up, unassisted, their end of a rate controversy.

Adequacy of Service

Fundamental to the determination of whether the public interest is attained and the existing utility deserving of protection from competition is the assurance that adequate service is being rendered at reasonable rates. Here, again, the principle is simple and direct, but the decision as to adequacy of service in a specific case is one for the commission to make after pondering over all the circumstances. The corresponding duties resulting from receiving the privilege of monopoly go to the foundations of the public utility concept. The Maine commission has stated this principle impressively as follows:

> Yoked to, and in perfect step with, this monopolistic right of each company is the duty which it owes to the public. If the company owed no duty to those living within its territory and could act its own pleasure unrestricted and unenlarged by law or other rule of conduct, the result would be that each such company would, within its territory, have all the authority of a feudal lord, demanding and receiving unmerited and arbitrary tribute, yielding in return those things, and only those things, which its capricious pleasure suggested. Such, however, is not in accord with present knowledge of law, equity, or modern enlightened practice. The enjoying of a monopoly compels the performance of resultant duties. If a utility would occupy exclusively a given territory, it must serve adequately, fairly, fully, this same territory. For the very reason that it is the only one in the field, it is under imperative obligation to serve within reasonable bounds, all whom it finds within its field.[22]

The majority of the states have decreed monopoly with a condition —that existing service be adequate and rates reasonable. The commissions are charged with determining whether these obligations are met. In doing this, no formula has been set up beyond the general specification that the utility must be both able and willing to meet all reasonable demands from all classes of consumers.[23] Thus a company not having a sufficiently large installation to meet the demands of large power consumers cannot be considered to be rendering adequate service.[24] But a public utility must not be expected to meet unreasonable demands, and in one noteworthy case the Idaho commission declared that poor

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[22] *Churchill* v. *Winthrop & Wayne Light & Power Company* (Me.) P.U.R. 1916F, 752. Cf. Pound, Roscoe, *The Spirit of the Common Law*, p. 14; and Glaeser, M. G., *Outlines of Public Utility Economics*, p. 167.

[23] *Coast Counties Gas and Electric Company* v. *Sierra and San Francisco Power Company* (Cal.) P.U.R. 1917C, 709; *Pacific Gas and Electric Company* v. *Great Western Power Company* (Cal.) P.U.R. 1917C, 820.

[24] *Re Great Western Power Company* (Cal.) P.U.R. 1915E, 843.

heating service from an electrical utility did not constitute inadequacy, because electricity is not economically suitable for heating purposes.[25] Extensive use of the service has been made a criterion of adequacy.[26] Complementary to the adequacy of the service is the consideration of whether or not rates are reasonable. The promise of a mere shading of rates on the part of a potential competitor has been condemned as an excuse for duplication of facilities.[27] Nor does the lawful increase of rates by the utility in the field warrant the intrusion of a competitor upon the complaint of disgruntled consumers.[28]

Summing up, the case for adequacy of service does not appear to rest solely upon whether an applicant can render cheaper and better service, if the commission is satisfied that the occupant company is putting forth reasonable effort to provide service and is charging reasonable rates, all circumstances taken into account. This emphasis on the word "reasonable" suggests that the protection to monopoly is not an arbitrary and unvarying rule, but "is a practical system, designed . . . . to promote the public good, and the particular facts in each case are to be regarded in applying it,"[29] and that competition is to be avoided except as a last resort. The responsibility, again, is on the commissions, and the success of the system is dependent on their proper functioning. Perhaps the commissions ought not to go too far with such vague doctrines as the one "that the public must be concerned as distinguished from any number of individuals." Such a statement implies, if it has any sensible meaning at all, that the public convenience and necessity is nothing more than the judgment of the commission as to what is best for the public. Turning a deaf ear to public demand for service is dangerous procedure, even though it may be true that the public may not know its own interest in all cases. Once more an illustration is given of the extensive discretionary power which has been vested in the state public service commissions.

Having concluded service to be inadequate, the commission has still to decide whether the admission of competition is the proper corrective. This issue the majority of the state laws and commission interpretations have resolved in the negative. The emphasis has been placed on trying to improve the existing service rather than on resorting to the admission of a second utility.[30] Protection has been denied, however, where there has been wilful failure to render adequate service over a long period of

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[25] *Re Idaho Light and Power Company* (Idaho) P.U.R. 1915A, 2.
[26] *Re Farmers' Mutual Telephone Company* (Ohio) P.U.R. 1916D, 930.
[27] *Re Belmont and P. V. Telephone Company* (Wis.) P.U.R. 1918A, 491; *Re Beaver River P. & L. Company* (Idaho) P.U.R. 1915B, 281; *Re Holmes* (Cal.) P.U.R. 1927D, 68.
[28] *Re Hillsdale and W. Telephone Company* (Wis.) P.U.R. 1926C, 545; *Re Union Cooperative Telephone Company* (Wis.) P.U.R. 1930E, 273.
[29] *State* ex rel. *Atkinson* (Mo. Sup. Ct.) 275 Mo. 325, 204 S. W. 897, P.U.R. 1919A, 343.
[30] *State* ex rel. *United Auto Transportation Company* v. *Department of Public Works* (Wash. Sup. Ct.) 206 Pac. 21, P.U.R. 1922E, 335; *Coney Island Motor Bus Corporation* v. *Public Utilities Commission* (Ohio Sup. Ct.) 115 Ohio St. 47, P.U.R. 1926E, 284; *Vogt* v. *Linden Telephone Company* (Wis.) P.U.R. 1917A, 614.

time and disregard of requests for improvement, or where the likelihood of success in bringing the service up to standard is improbable.[31]

A few of the commissions, that of California being the leader, have maintained that existing utilities shall not be allowed to await the threat of competition before taking steps to improve service. Thus, a utility rendering poor service will be given no consideration upon the application of another company to render service. The reasoning is that while competition is *per se* undesirable in most cases, the threat of competition is necessary to provide the incentive to give good service. It is reasoned further that competition will never be threatened if the only result of an application to enter is to be that the occupant will be forced to improve service. A corollary to the California policy is that in the case of regions not yet fully developed and where natural resources are abundant, there is special need for encouraging progressiveness. It is maintained that assurance of monopoly results, not in concern for progress, but in stagnation. Confronted with the objection that the effect of competition must be cut-throat activity and eventual consolidation, the proponents of this policy say that such a result is avoided by the fact that the public utility commission has jurisdiction to outlaw unfair tactics.[32]

Apparently, the California commission is willing to admit its inability to require a public utility to be progressive without using the threat of competition as a motivating force. At the same time, it is confident that by its intervention competing utilities can be restrained from competing unfairly. This would seem to involve the conviction that it is easier to control competition in public utility industries than to control monopoly. Be that as it may, the majority of the states have asserted their power in the second case, by requiring utilities to provide adequate service at reasonable rates under monopoly. That two utilities may advantageously be admitted into a large territory which has not approached the saturation point in its development and where natural resources exist in abundance, is logical, and this policy no doubt would be acceptable to most commissions. The division of a large, relatively undeveloped territory between two or more organizations need not lead to the cut-throat

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[31] *Re Cole* (Mich.) P.U.R. 1921C, 385; *Re Coles County T. & T. Company* (Ill.) P.U.R. 1918A, 558; *Re Turner L. & P. Company* (Me.) P.U.R. 1916A, 418; *Peck* v. *Public Utilities Commission* (Ohio Sup. Ct.) P.U.R. 1930C, 401, 121 Ohio St. 571, 170 N.E. 364.

[32] *Pacific Gas and Electric Company* v. *Great Western Power Company* 1 Cal. R. R. Commission Reports 203 (June 18, 1912); *Re Oro Electric Corporation* 2 Cal. R. R. Commisison Reports, 756 (April 29, 1913); *Re Idaho Light and Power Company* (Idaho) P.U.R. 1915A, 2; *Pacific Gas & Electric Company* v. *Great Western Power Company* (Cal.) P.U.R. 1922B, 495; *Re Pacific Electric Motor Transportation Company* (Cal.) P.U.R. 1930E, 427; *San Diego & C. Company* v. *R. R. Comm.* (Cal. Sup. Ct.) P.U.R. 1930E, 464, 292 Pac. 640.

The California commission seems to have receded somewhat from its original position in a recent case (*Re Western Natural Gas Company*, P.U.R. 1930A, 307), in which the petitioner was denied a certificate to supply natural gas in northern California in competition with the Pacific Gas and Electric Company, although it was shown that the applicant would engage almost exclusively in the wholesale business and that the territory had not reached the saturation point. Further reference is made to this case when the policy of restricting competition in wholesaling is discussed.

competition which follows the attempts of overlapping systems to avoid incomplete utilization of facilities. But to explain the need for retaining competition on the ground that the public interest cannot be safeguarded without that threat, is to admit the failure of a regulatory body to achieve the result for which it was created, namely, the substitution of regulated monopoly for competition in order to avoid wasteful duplication within a given area. To the extent that commissions resort to competition it is an indication of their inability to make the present regulatory device function. It demonstrates lack of confidence in the possibility of controlling monopoly and making it serve the public interest. The California commission has, tacitly at least, accepted that conclusion. It may be that in so doing, the California regulators have been more foresighted, also more frank, than have the other state bodies.

Competition has also been used by some commissions as a club to combat attempts by public utilities to evade regulation. In Missouri, a distributing natural gas company, buying its supply from an interstate wholesale company with which it was affiliated and which the commission could not control, was denied protection from competition because the commission could not effectively regulate it.[33] A similar situation in New York, where a motor carrier connived with a New Jersey corporation to evade regulation under New York state laws, was met by the commission of the latter state in granting a certificate to another carrier.[34] An unregulated monopoly is not tolerable, and unless the scope of regulatory authority can be made to cover the extent of a public utility's activity, it may not be possible, or at least feasible, to rule out competing services entirely.[35]

The preceding pages have undertaken to demonstrate the predominance of the belief that public utilities should not be operated in competition with each other, with particular reference to the attitude of the commissions whose task it is to supervise public utility corporations as provided by law. It has been seen that for the most part competition is not considered a suitable method for regulating this type of business enterprise. The question follows as to the methods available to the commissions for restraining unlimited competition.

The Certificate of Convenience and Necessity

By far the most important of these devices is the power given to commissions to require that a certificate of convenience and necessity be acquired by a company before it may "transact any business" or "exercise

[33] *Re Industrial Gas Company* (Mo.) P.U.R. 1929A, 516.
[34] *Re Tappan & Nyack Bus Inc.* P.U.R. 1930A, 14.
[35] *Wichita Gas Company* v. *Public Service Commission* (Kan. Sup. Ct.) P.U.R. 1931B, 442.

any franchise or right under any provision of the law."[36] Such a law gives to the commission considerable latitude in determining when more than one utility shall be admitted into a given territory. The question of what constitutes adequate service, discussed above, bears close relationship to the problem of whether convenience and necessity demand additional facilities. In other words, the previous pages have been largely concerned with commission activity arising out of the fact that regulatory commissions have been made responsible for determining when a competing company is necessary and convenient. But it should be noted that convenience and necessity may be found to exist even in the face of what might ordinarily be termed adequate service on the part of an existing facility, if a proposed service is definitely superior.[37] The convenience and necessity must be appreciable, however, so as to constitute an addition to public welfare sufficient to compensate for the loss involved in the duplication or displacement of facilities. The meaning of convenience and necessity as used in the statutes has been variously defined, and there has been not a little disagreement concerning it.[38] The most intelligent interpretation seems to be that there is no precise meaning to the phrase. If the legislatures in passing certificate of convenience and necessity laws have adopted unprecise phraseology with the idea of giving the commissions room for discretion, they are to be commended, for a regulatory policy is needed which is capable of easy adjustment to particular circumstances, and to new situations which constantly arise in a dynamic field.[39] Once more the discretionary responsibility that is placed on the commissions emphasizes that the ability of the body charged with administration of the law determines the success of the regulatory undertaking.

The commissions have taken particular care to stress that the requirement of obtaining a certificate of convenience and necessity does not bar competition where it is desirable and in no way creates an irrevocable monopoly.[40] Nor does the granting of a certificate to a person or corporation give him an exclusive right to operate,[41] except of course against those who have not secured a permit.[42] Making this point clear seems

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[36]Hyneman, C. S., "Public Encouragement of Monopoly in Public Utility Industries," *Annals of the American Academy of Political and Social Science*, Vol. 147 (1930), p. 160.

[37]*Re Hodge Transportation System* (Cal.) P.U.R. 1924D, 835; *Re Kipp's Express and Van Company* (Ill.) P.U.R. 1923E, 249.

[38]Trumbower, H. R., "Regulation of the Common Carrier Motor Vehicle," *American Economic Review Supplement*, Vol. 19 (1919), p. 234.

[39]*Re Wright* (Va.) P.U.R. 1925B, 147; *Re Perry County T. & T. Company* (Pa.) P.U.R. 1917A, 916.

[40]*Re Southern Pacific Motor Transportation Company* (Cal.) P.U.R. 1929A, 193; *State ex rel. Electric Company v. Atkinson* (Mo. Sup. Ct.) 204 S. W. 897, P.U.R. 1919A, 343; *Farmers' & M. Co-op. Telephone Company v. Boswell* (Ind. Sup. Ct.) 119 N. E. 513, P.U.R. 1918E, 172; *Re Detroit Chicago Motor Bus Company* (Mo.) P.U.R. 1928C, 102.

[41]*Re Terre Haute I. E. Traction Company* (Ind.) P.U.R. 1923B, 717; *Re Central of Georgia Motor Transport Company* (Ala.) P.U.R. 1928E, 535.

[42]*Frost v. Corporation Commission* (U. S. Sup. Ct.) 278 U. S. 515, 49 Sup. Ct. Rep. 235, P.U.R. 1929B, 634; *Farmers' & M. Co-op. Tel. Company v. Boswell* (Ind. Sup. Ct.) 119 N. E. 513, P.U.R. 1918E, 172.

advisable, in view of the mistaken notions concerning it. The Indiana Supreme Court has even been obliged to deny officially that a law requiring a public utility to procure a certificate of convenience and necessity deprives such a utility of any inalienable right, improperly confers on public utilities already in possession of a certificate special privileges and immunities, and operates in contradiction of the Fourteenth Amendment and of Article I, Section 10, of the Federal Constitution.[43] The basis of the decision upholding the legality of requiring a certificate is that contracts and franchises which involve the state's welfare are made subject to the police power of the state.

It was disclosed above that most commissions have elected to try to bring about improvement in service which has been unsatisfactory before resorting to competition. Some of the commissions have gone still further in giving to legislation on the certificate of convenience and necessity a strict monopoly interpretation. At least three states have required that an invading utility shall buy the useful property of the company in the field as a condition precedent to the receiving of a certificate, provided, of course, that the occupant is willing to sell.[44]

The commissions have been particularly loath to grant certificates to competing telephone companies, because of the special need for a single unified system.[45] Special anti-duplication laws have been passed by some states to prevent duplication of telephone properties. These laws have been prompted not only by the special need for unified telephone service but by the ease with which telephone lines can be extended, resulting in invasion of occupied territory.[46] With regard to the transportation utilities, where the certificate has found its most extensive use, there is some lack of uniformity in the policies of the several states. Consideration of this phase of the certificate of convenience and necessity legislation is reserved for Chapter VII, since with respect to transportation the principal features of the convenience and necessity doctrine have to do with the restriction of substitute services.

The unavoidable impression gained from studying commission cases on the subject is that the commissions do not make any detailed study of the facts in trying to ascertain the results to be expected from granting a certificate to a proposed competitor. It is a criticism of the commissions that while the law is designed to give them discretionary power to decide each case on the basis of the determined facts, they have been inclined

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[43] *Farmers' & M. Co-op. Telephone Company* v. *Boswell* (Ind. Sup. Ct.) 119 N. E. 513, P.U.R. 1918E, 172.

[44] The Missouri commission requires a written offer by the applicant to purchase the plant of the incumbent company at a price to be fixed by the commission. *Re Green L. & P. Company* (Mo.) P.U.R. 1920F, 980; *Re Ward* (Mo.) P.U.R. 1922D, 727; *Re B. F. Eyer* (Mo.) P.U.R. 1926A, 140; *Re Turner L. & P. Company* (Me.) P.U.R. 1916A, 418; *Re Richmond* (Cal.) P.U.R. 1924D, 37.

[45] *Wayne County Mutual Telephone Company* v. *Commercial T. & T. Company* (Ill.) P.U.R. 1915E, 673.

[46] See Glaeser, M. G., *op. cit.*, pp. 249-250.

to depend for the most part on the statements of the contending parties.[47] This criticism furnishes only one example of the general indictment being made against commission procedure. The irresponsible action by a commission which, unable to decide between two applicant motor carriers, solved the problem to its own satisfaction by granting certificates to both and bidding them to fight it out, illustrates the point.[48]

The certificate of convenience and necessity has, nevertheless, been a very useful device in withholding undesired competition. Since the Massachusetts legislature decreed in substance in 1902 that a gas company must procure a certificate of convenience and necessity before entering a field already occupied,[49] the principle has spread rapidly. By 1917 at least seventeen states required it with respect to one or more of the public utility industries.[50] In 1930 there was a certificate of convenience and necessity law in twenty-eight states.[51] The law does not apply to the same types of utilities in the various states, but in the more populous and industrialized states such as Massachusetts, New York, Illinois, Pennsylvania, and California, it is made to cover most of the local utilities.[52] The extension of the use of the certificate idea is likely to continue, since it is consistent with the conviction that duplication of public utility facilities is wasteful. The suggestion in the California policy, however, to the effect that the elimination of competition can proceed only in proportion to the effectiveness of regulation in preventing extortion is to be kept in view.

The certificate of convenience and necessity is a means of preventing competition. The commissions by their powers concerning consolidation, merger, and sale have in many cases effected an end of competitive conditions already existing. In twenty-two states the regulating authorities have jurisdiction over matters concerning consolidation of public utility properties.[53] The commissions cannot force a consolidation of competing utilities, a circumstance which has elicited expressions of regret from more than one commission. But it has been possible for them to exert considerable influence by indicating the advantages of a single unified system.[54] Moreover, pressure has been brought to bear in favor of con-

[47]Cf. Hyneman, C. S., "Public Encouragement of Monopoly in Public Utility Industries," *Annals of the American Academy of Political and Social Science*, Vol. 47 (1930), p. 160.

[48]*Re Moana Bus Company* (Nev.) P.U.R. 1921C, 485.

[49]The evolution of certificate of convenience and necessity legislation is recited briefly in the following: *Fort Supply T. & T. Company* v. *Pioneer T. & T. Company* (Okla.) P.U.R. 1917A, 188, 192.

[50]*Ibid.*

[51]Bonbright & Company, Inc., *A Survey of State Laws on Public Utility Commission Regulation in the United States* (2d. ed.), 1930.

[52]*Fort Supply T. & T. Company* v. *Pioneer T. & T. Company* (Okla.) P.U.R. 1917A, 188, 194.

[53]Bonbright & Company, Inc., *op. cit.*, p. 16.

[54]*Re Ausable Forks Electric Company, Inc.* (N. Y.) P.U.R. 1920B, 791; *Re Southern California Telephone Company* (Cal.) P.U.R. 1917A, 989; *Re Indiana Bell Telephone Company* (Ind.) P.U.R. 1922C, 348; *Re Tri-State T. & T. Company* (Minn.) P.U.R. 1923C, 815; *Re Continental Gas & Electric Corporation* (Neb.) P.U.R. 1925A, 448; *Re Carmel L. & P. Company* (N. Y.) P.U.R. 1926C, 830; *Blackledge* v. *Farmers' Independent Telephone Company* (Neb.) P.U.R. 1919D, 211, 224; *City of Spokane* v. *Washington Water Power Company* (Wash.) P.U.R. 1921D, 762, 773.

solidation in at least two instances by denying rate increases unless companies agree to consolidate.[55] The commissions have justified their action by stating that the unified service would be worth more to the consumers, but that the existing competitive service was not of such quality as to warrant higher rates. The California commission, along this same theme, decided that "unnecessary expenses due to the methods and practices employed by competing companies to secure business should not be allowed in an application for an increase in rates."[56] On the other hand, the universal rule laid down by the commissions that a full return on investments in unnecessary duplication cannot be expected as a consequence of consolidation, has probably curbed the unification of competing public utilities.[57]

Certain commissions have been known to use their power to disapprove security issues to prevent competition.[58] The New Jersey commission has used its power over the issuance of securities more for the purpose of protecting investors than for the purpose of serving the public welfare by restricting competition, since in that state duplication can be controlled by means of the certificate of convenience and necessity.[59] It is doubtful whether any legislature meant the control of security issues to be used to prevent competition, and the Indiana commission was checked by the supreme court of that state in attempting to do so.[60] In states such as Georgia, Maine, Nebraska, Ohio, Vermont, and Virginia, where there is no certificate law but is a securities control,[61] it might be possible to restrict competition in this way if a commission were so disposed. It no doubt would be a usurpation of authority beyond the intent of the law, however, and subject to denial by the courts as in the Indiana case cited above. None of these states appears to have tested the point; in fact, the Ohio commission refused to do so on application of a utility threatened with competition.[62]

In taking a stand against competition in the rendering of public utility services, the commissions have usually interpreted the monopoly privilege as applying only to retail companies. In other words, it has been held that it is in distribution that the greatest wastes from duplica-

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[55] *Re Union Telephone Company* (Mich.) P.U.R. 1924B, 674; *Re Capitol Traction Company* (D. C.) P.U.R. 1930A, 25.

[56] *Re Los Angeles Gas & Electric Corporation* (Cal.) P.U.R. 1919D, 140.

[57] Ruggles, C. O., "Problems of Public Utility Rate Regulation and Fair Return," *Journal of Political Economy*, Vol. 32 (1924), pp. 543-566. See also the following cases: *Re Washington County Telephone Company* (Wis.) P.U.R. 1921C, 828; *Re Santa Barbara Telephone Company* (Cal.) P.U.R. 1917A, 768; *Re Duluth Street Railway Company* (Wis.) P.U.R. 1928B, 228; *Re Idaho Power Company* (Idaho) P.U.R. 1923B, 52; *Re Bowdoin Utilities Company* (Mont.) P.U.R. 1931B, 20.

[58] *Re Himburg* (Mich.) P.U.R. 1922C, 420; *Re Community Power & Light Company* (N. J.) P.U.R. 1926A, 536, 544.

[59] *Ibid.*

[60] *Public Service Commission of Indiana* v. *State* ex rel. *Merchants Heat & Light Company*, 184 Ind. 273, 111 N. E. 10. Cf. Hyneman, C. S., "Public Encouragement of Monopoly in Public Utility Industries," *Annals of the American Academy of Political and Social Science*, Vol. 47 (1930), p. 160.

[61] Bonbright & Company, Inc., *op. cit.*

[62] *Re Application of the Mahoning County Light Company* (Ohio) P.U.R. 1915A, 74.

tion occur.[63] A wholesale utility, particular reference being to the production of electricity for resale, is expected to find its own market in competition with other companies of similar nature, if such exist. The reasons for this attitude are that wholesale companies are often beyond the jurisdiction of a state commission, duplication is not so wasteful in the production end of the business, and states have an eye to encouraging development of natural resources.[64] The California commission recently rejected the above principle and denied entrance to a second natural gas company proposing to engage in wholesaling and selling direct to large industrial users.[65]

Regulation of Competitive Practices

The restriction of competition, and the regulation of monopoly resulting therefrom, has not been the only task of the state commissions. Lacking the power to eliminate competition where it lawfully exists, the commissions can only bring their influence to bear in discouraging it,[66] and failing in the latter, there remains the obligation to see that the operations of the competitors with respect to each other are "fair." In fact, it has been considered by some that the chief purpose of public utility regulation should be to prevent unfair competition rather than to prescribe rate and service standards under monopoly.[67] That was the essence of the federal policy in the control of railroads before the passage of the Transportation Act of 1920. Until very recent years, the elimination of the most reprehensible competitive tactics rather than the regulation of rates has been the objective of interstate public utility regulation, and it would not be correct to say that the competitive ideal has yet been entirely discarded in that field. The regulation of local utilities, however, has sought to displace competition, not merely to regulate it. But there still remains a moderate residuum of competition, necessitating regard for the regulation of competitive practices as well as for the control of rates under monopoly. In the field of motor transportation, it is still true that the main concern of regulatory authority has not been with the fixing of rates or the prescribing of service requirements, because the

[63] *Re Grafton Power Company* (N. H.) See *Public Utilities Fortnightly*, Vol. 5 (1930), p. 346.

[64] *Central Water Power Company* v. *Wisconsin T. L. H. & P. Company* (Wis. Sup. Ct.) 209 N. W. 755, P.U.R. 1927A, 76; *Re Chas. H. Thompson et al.* (Vt.) P.U.R. 1916E, 232; *Re Cayuga Power Corporation* (N. Y.) P.U.R. 1917F, 915.

[65] *Re Western Natural Gas Company* (Cal.) P.U.R. 1930A, 307. Two of the members of the commission dissented to the decision to protect the Pacific Gas & Electric Company from competition where distribution was not involved and where a large portion of the large territory was not receiving gas service at all, but where the occupant proposed to extend natural gas distribution in the near future.

[66] *Re Schuylkill Electric Company* (Pa.) P.U.R. 1918E, 489; *Brey* v. *Poy Sippi Telephone Company* (Wis.) P.U.R. 1927A, 542; *Citizens' Mut. T. & T. Company* v. *Public Service Commission* (Pa. Sup. Ct.) P.U.R. 1928D, 578.

[67] Cabot, Philip, "Competition Is the Life of Trade," *Harvard Business Review*, Vol. 3 (1925), pp. 385-393; Richberg, D. R., "Critical Issues in Public Utility Regulation," *Journal of Land and Public Utility Economics*, Vol. 6 (1930), p. 1.

demand for regulation has not come, for the most part, from the users of the service. It has come, rather, from the operators themselves, evidence that competition, and not monopoly, can be the basis for governmental supervision in local public utility operation.[68]

The regulation of existing competition in rendering public utility services is best discussed in two sections, first, in connection with rates, and then in the matter of services. There has been a surprising lack of unanimity in the practice of the various commissions in regulating the rates of competing public utility companies. A number of the commissions have taken the position that competition, being undesirable and at the same time impossible of elimination in many instances, should in effect be emasculated by requiring that the same rates be charged by all who offer the service.[69] This practice has been followed regardless of the fact that it results in a higher rate of return for the one property than for the other.[70] The Montana commission recognized that under competitive conditions the value of the properties could not be the sole basis for rates because then the utility serving for less would get all of the business.[71] In the Washington street railway cases, the District of Columbia commission insisted that the fares be equal to prevent a disruption of service, and proposed that taxes be lightened on the one system and a proportionately heavier burden be placed on the other in an endeavor to equalize their respective returns from the same rates.[72]

But while it may be considered bad policy for one utility to charge more than a competitor, it is doubtful whether a commission can force a public utility to establish a rate lower than would otherwise be a reasonable one in order to meet competition. The Massachusetts commission committed itself only to the extent of stating that a public utility is under an "implied obligation" not to charge more than the others in the field,[73] and the California commission observed that it would be "impracticable" to require equal rates.[74]

Some of the other commissions do not seem to feel obliged to maintain competition on an equitable basis. Their attitude suggests that competition should be full and free, a survival of the fittest, and the sooner one is eliminated and the stronger company given the field alone,

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[68]Trumbower, H. R., "The Regulation of the Common Carrier Motor Vehicle with Respect to its Competitive Aspects," *American Economic Review Supplement*, Vol. 19 (1929), p. 226.

[69]*Re Massachusetts Northeastern Street Ry. Company* (Mass.) P.U.R. 1917A, 331; *Re Citrus Belt Gas Company* (Cal.) P.U.R. 1918D, 771; *Re United Fuel Gas Company* (W. Va.) P.U.R. 1918C, 193; *Re Washington Ry. and Electric Company* (D. C.) P.U.R. 1919D, 672, 1921B, 45; *Re Peninsular Railway Company* (Cal.) P.U.R. 1922B, 776; *Re Purple Swan Safety Coach Lines* (Mo.) P.U.R. 1928A, 193; *Re Southern California Gas Company* (Cal.) P.U.R. 1918A, 604.

[70]*Re Los Angeles Gas & Electric Corporation* (Cal.) P.U.R. 1927C, 547; *Re Washington Ry. & Electric Company* (D. C.) P.U.R. 1920E, 39.

[71]*Public Service Commission* v. *Blue Flame Gas Company* (Mont.) P.U.R. 1926D, 314.

[72]*Re Washington Ry. & Electric Company* (D. C.) P.U.R. 1920E, 39.

[73]*Re Boston and Albany Railroad* (Mass.) P.U.R. 1917E, 875.

[74]*Re Western Pacific Railroad Company* (Cal.) P.U.R. 1925D, 843.

the better will the public welfare be achieved.[75] Not all of the commissions who do not favor equal rates take so extreme an attitude, limiting their expressed opinion to the proposition that competing utilities are not limited in soliciting competitor's business, and that commission concern with rates does not go beyond the fact that they shall not be more than will provide a reasonable return on fair value.[76]

Some of the commissions have been so energetic in their endeavors to prevent rate wars that they have been challenged in the courts respecting their power to limit rate-cutting activity. There have been a number of court and commission cases involving the principle of whether or not a public utility commission has the power to *fix* rates, or whether its power is limited to the prescription of maximum rates. Of course, in the event that the law expressly provides that a commission may establish minimum rates there is no argument. But most of the state public utility laws are not so drafted, and any power in this respect used by the commissions must be justified on grounds of legislative intent. In Iowa, where cities are supreme in rate regulation, the highest state court decided that rate-regulating power is not limited to the imposition of a maximum, but includes the power to fix minimum rates as well, on the ground that a public utility operating under a franchise has no constitutional right to compete in rates.[77] The Iowa judiciary pressed the argument that there is as much justification for the regulation of minimum rates of the local public utilities as there is in the case of the railroads.[78] The Interstate Commerce Commission, after a long battle, was granted the power to fix definitely the rates of railroads in 1920.[79]

In a similar case, involving a private utility and a municipal plant, the Utah supreme court reversed the state commission decision fixing a minimum rate, reproving the commission for being concerned too greatly with the relation between the contestants and not enough with the interest of the public in receiving a low rate arising out of a competitive situation. It was pointed out also that a municipal utility in Utah is privileged to recoup losses by taxation.[80] Other recent cases favor the interpretation of the Iowa court. The highest court of New York state reversed the commission which had declined jurisdiction to impose mini-

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[75] *Fort Supply T. and T. Company* v. *Pioneer T. and T. Company* (Okla.) P.U.R. 1917A, 188, 1917F, 948; *Re Wright* (Va.) P.U.R. 1925B, 141; *N. J. Gas Company* v. *Citizens' Gas Company of Vineland* (N. J.) P.U.R. 1918B, 453.

[76] *Fairbanks, Morse & Company* v. *Texas Power & Light Company* (U. S. C. C. A.—5th) P.U.R. 1929E, 483, 32F(3d), 693; *Re Milwaukee E. R. & L. Company* (Wis.) P.U.R. 1928E, 15; *Re Raystown Water Power Company* (Pa.) P.U.R. 1915B, 86a. Cf. *Public Utilities Fortnightly*, Vol. 4 (1929), p. 570.

[77] *Mapleton* v. *Iowa Public Service Company* (Iowa Sup. Ct.) 223 N. W. 476, P.U.R. 1929B, 359; *Pinney & Boyle Company* v. *Los Angeles Gas and Electric Company* (Cal. Sup. Ct.) 168 Cal. 12, 141 Pac. 620; *Economic Gas Company* v. *Los Angeles* (Cal. Sup. Ct.) 168 Cal. 448, 143 Pac. 717. The Iowa court cites the latter two California cases in support of its own view.

[78] *Ibid.*

[79] Vanderblue, H. B., and Burgess, K. F., *Railroads*, p. 59.

[80] *Logan City* v. *Public Utility Commission* (Utah Sup. Ct.) P.U.R. 1929A, 3; *Logan City* v. *Utah P. & L. Company* (Utah) P.U.R. 1928E, 57.

mum rates at the request of a private utility in competition with a municipal plant.[81] The Montana commission is especially emphatic in its defense of minimum rate fixing, and assails the Utah court's action as "wholly at odds with the modern trend of thought in public utility regulation."[82] In support of this statement the Montana commission cites the decision of the Idaho supreme court, which was opposite to that of the Utah court, despite the fact that "Idaho has a Public Utilities Act substantially similar to Utah."[83] The power to fix minimum rates is of special significance in a state such as Montana, where the commission has no power to prevent competition through the certificate of convenience and necessity. The Montana supreme court in upholding the decision of the commission specifically referred to the latter situation, venturing the opinion that since the legislature had not enacted a certificate of convenience and necessity law to control competition, "it was the *intention* (author's italics) of the legislature to clothe the Commission with the power to fix the precise rate to be charged by the utility for its commodity."[84] On the other hand, the Colorado commission used its certificate authority to prevent competition where there was danger of a potential rate war, "in view of its limited jurisdiction to prevent reduction of rates by such company."[85]

Although the matter is by no means settled, the balance of judgment by commissions and courts has been in favor of commission control of rate cutting between competitors if such power can be read into the law. Not the least significant factor in the recent minimum rate controversies is that most of the cases are concerned with a situation where a municipal plant and a private utility are in competition. If the competition of municipalities becomes a more potent factor in the public utility industries, and especially in the electric light and power industry where it is particularly threatening, this minimum rate problem will become increasingly prominent.[86] The right of a municipality to sell for less than cost and cover losses by taxation is also involved. If the commissions were to commit themselves to the rule that a municipal undertaking must maintain rates equal to those charged by a private company, however, a city could be prevented from using municipal competition as a lever to obtain service at reasonable charges. The result then would be to discourage municipalities from embarking upon such projects.

The real issue in the minimum rate question is whether state com-

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[81] *Re Niagara, Lockport, and Ontario Power Company* (N. Y.) 241 N. Y. Supp. 162, P.U.R. 1930D, 58.

[82] *Public Service Commission* v. *Great Northern Utilities Company* (Mont.) P.U.R. 1929B, 176. The defendant and the Citizens' Gas Company were both supplying natural gas in Shelby, and engaging in a competitive rate war. The Montana commission took action on its own motion to stop the struggle.

[83] *Ibid.*

[84] *Great Northern Utilities Company* v. *Public Service Commission of Montana* (Mont. Sup. Ct.) P.U.R. 1930E, 134.

[85] *Re Greeley Trans. Company* (Colo.) P.U.R. 1929C, 106.

[86] Municipal competition is considered in the following chapter.

missions are to have the power to soften the competition between utilities by denying them the right to compete fully and freely. As the Montana commission appropriately observed, "if rates are absolutely fixed by the commission, with no permission to the utility corporations to charge more or less, the public can receive no advantage from competition."[87] With rates fixed, competition continues only in the rendering service. Experience has demonstrated that competition, if it exists at all, should in most cases be so limited in the public utility industries. It is certain that there is need for some restriction to the cutting of rates below cost in an untempered effort to annihilate competition. It is not so apparent that where two utilities serve the same territory and one can charge a lower rate than the other, he should be prevented from so doing, unless it is clear that the public interest requires the retention of both services. One commission took a compromising position in the matter of rate competition when it stated that "low rates charged by a competing carrier are not of themselves to be condemned unless they tend to impair or destroy the service to which the public is entitled . . . . the public should not be deprived of the benefit of lower rates, because the protestants are unable to meet them."[88] In other words, it should be the duty of the commission, before passing judgment on the legitimacy of rate discrepancies between competitors, to determine whether the difference is attributable to cost and efficiency or whether it is prompted by the desire to compete on a cut-throat basis.

The duty to serve all who want service and can pay for it is a basic obligation arising out of the public utility status. But just as the trend in commission regulation is to prevent rate wars, so also is there a tendency on the part of commissions to eliminate competition altogether by dividing up the territory between the competing companies. As early as 1908 a Massachusetts court approved a division of territory between two electric utilities which had been made by the commission.[89] In 1913, the Wisconsin supreme court regarded a contract between two telephone companies as "in harmony with the policy of the state."[90] Again, there is no uniformity in commission power and practice, although the majority of the commissions favor dividing the territory, where such division is in the public interest. Where a division of territory has been allowed, it has usually been made plain that contracts to that effect between utilities have no force until approved by the commission.[91] But once made, consumers cannot demand service from the utility which has vacated on the

[87] *Public Service Commission* v. *Great Northern Utilities Company* (Mont.) P.U.R. 1929B, 176.

[88] *Re Hemet Transfer and Storage* (Cal.) P.U.R. 1927B, 730.

[89] *Weld* v. *Gas & E. L. Com'rs.* (Mass. Sup. Ct.) 197 Mass. 556 (1908), 84 N. E. 101. Cf. Smith & Dowling, *Cases on Public Utilities*, p. 264.

[90] *MacKinley Telephone Company* v. *Cumberland Telephone Company* (Wis. Sup. Ct.) 152 Wis. 359, 140 N. W. 38 (1913).

[91] *Citizens' Mutual T. & T. Company* v. *Public Service Commission* (Pa. Sup. Ct.) P.U.R. 1928D, 578; *Re Gasconade Telephone Company* (Mo.) P.U.R. 1926A, 573.

plea that they are assigned to a particular system against their will.[92] The court in affirming the commission order said: "All the orders are directed to or against the utility companies. None of the orders require anyone to patronize either company."[93]

The division of territory has been upheld in a number of cases.[94] But proper division of territory with commission approval is a different matter than the refusal of a second utility to serve a customer of a competitor, for, as the West Virginia commission observed, the granting of franchises to two utilities is *prima facie* evidence that the will of the state is that the utilities are not to be protected from each other, but must meet all reasonable demands for service.[95] In this case, the supreme court of West Virginia had previously reversed the commission on the general grounds that the purpose of commission regulation is to prevent unnecessary duplication, although West Virginia has no legislation disapproving duplication. The industrial consumers were not content to rest the case, however, especially since the two utilities were owned by the same holding company. The court finally remanded the case to the commission, whereupon the latter body restated its former order requiring the companies to serve all who might demand service.[96]

It was mentioned previously that in most of the states there has been an aversion to competition in the telephone business. The Wisconsin anti-duplication law, which applies to extensions and to invasion of territory by telephone companies, is typical.[97] The encouragement to monopoly in this field is due to the need for complete interconnection between all telephone users, and the special laws relating to telephone companies are considered necessary because of the ease with which a telephone company can extend its lines, often into territory occupied by or reserved for another. Boundary cases have been very troublesome in the regulation of telephone utilities. Perhaps their chief claim to recognition here is that such cases require commission attention which could more profitably be spent on problems of greater importance.[98]

Consolidation of telephone companies has been accomplished whenever

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[92] *Palmyra Telephone Company* v. *Modesto Telephone Company* (Wis. Sup. Ct.) 167 N. E. 860; *Jersey Central Power & Light Company* (N. J.) P.U.R. 1927B, 596.

[93] *Palmyra Telephone Company* v. *Modesto Telephone Company* (Wis. Sup. Ct.) 167 N. E. 860.

[94] *Re Great Western Power Company* (Cal.) P.U.R. 1917F, 569; *Rockton Electric Company* v. *South Beloit Water, Gas, & Electric Company* (Ill.) P.U.R. 1921E, 17; *Re Pacific Gas & Electric Company* (Cal.) P.U.R. 1923C, 535; *Cooper Bus Company* v. *Public Utility Commission* (Ohio Sup. Ct.) P.U.R. 1928A, 738, 117 Ohio St. 287, 158 N. E. 543; *Re Public Service Company* (Colo.) P.U.R. 1928B, 574; *Meadville Telephone Company* v. *Petroleum Company* (Pa.) P.U.R. 1931A, 268.

[95] *Huntington Brick & Tile Company* v. *United Fuel Gas Company* (W. Va.) P.U.R. 1930A, 321. See also *McMillen* v. *Greensboro Gas Company* (Pa.) P.U.R. 1918D, 855; and *Farmers' Fountain Telephone Company* v. *Harrisonville Telephone Company* (Ill.) P.U.R. 1930A, 136.

[96] *Ibid.*

[97] Glaeser, M. G., *op. cit.*, p. 249.

[98] In settling boundary disputes, the commissions have used the convenience of the people in the district as the primary test. Access to trade centers is frequently mentioned, and if some duplication is required as a result of this test, the commissions have been disposed to permit it. *Re Poy Sippi Tel. Co.* (Wis.) P.U.R. 1917B, 469; *Tallman* v. *Delaware & A. T. & T. Co.* (N. J.) P.U.R. 1917D, 390; *Re Pacific T. & T Company* (Ore.) P.U.R. 1924D, 204; *Beaver Tel. Company* v. *Public Utility Comm. of Ohio* (Ohio Sup. Ct.) 170 N. E. 173.

possible,[99] but in the event that the competitors cannot agree, the commissions have been accustomed to require physical connection between the lines of the competing companies as preferable to unlimited duplication.[100] The right of a commission to require such physical connection is well established in most of the states.[101] The Minnesota commission declared that "an enforced physical connection between the lines of competing telephone companies is not such a taking of property as can be justified only under the power of eminent domain, but is a mere exercise by the state of its right of regulation."[102] The Michigan commission has used competition as a threat in coercing unwilling telephone companies to connect their lines with each other.[103] The same preference for physical connection rather than complete duplication was shown by the California commission in approving a contract whereby one company brought water to the city limits of San Diego and a second competing company was granted the right to distribute it.[104]

Regulatory Processes Foster Monopoly

In the preceding chapter the economic factors underlying the monopolistic organization of public utility business were discussed. The present chapter has indicated that social attitudes and legal policies, in part reflecting the underlying economic factors, also have contributed to the monopolistic features of this type of enterprise. Because of the administrative powers conferred on commissions in most of the states, public policy as to competition and monopoly has been manifested through their procedures and orders. It is plainly apparent that the public utility commissions, in the exercise of their discretion under the law, have contributed in several ways to the existing monopolistic structure of the industries.

The commissions have not been entirely free to do otherwise since they have had to function within a framework determined by legislatures and court decisions. The necessary compliance of the commissions with judicial opinions, especially of the Supreme Court, partly explains their contribution to the development of strongly intrenched monopoly in the

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[99] *Re Southern California Telephone Company et al.* (Cal.) P.U.R. 1917A, 989; *Blackledge v. Farmers' Ind. Tel. Company* (Neb.) P.U.R. 1919D, 224.

[100] *Michigan State Telephone Company v. Michigan R. R. Commission* (Mich. Sup. Ct.) 161 N. W. 240. P.U.R. 1917C, 355; *Re Chippewa County Telephone Company* (Wis.) P.U.R. 1917F, 583; *Theresa Union Telephone Company v. East Valley Tel. Company* (Wis.) P.U.R. 1917E, 387.

[101] *Owatonna v. Northwestern Tel. Exchange Company* (Minn.) P.U.R. 1917C, 565; *Blackledge v. Farmers' Ind. Tel. Co.* (Neb.) P.U.R. 1919D, 224; *Pacific T. & T. Company v. Wright-Dickinson Hotel Company* (D.C.) 214 Fed. 666; *Pioneer T. & T. Company v. State* (Okla.) 38 Okla. 554, 134 Pac. 398; *Wisconsin Telephone Co. v. R. R. Comm.* (Wis.) P.U.R. 1916D, 212; *Dakota Central Tel. Co. v. Social Hecla Telephone Co.* (S. D.) P.U.R. 1924A, 824.

[102] *Owatonna v. Northwestern Telephone Exchange Company* (Minn.) P.U.R. 1917C, 565.

[103] *Re Citizens' Telephone Company* (Mich. R. R. Comm.) P.U.R. 1915D, 795.

[104] The case was tested and the decision of the commission sustained by the state supreme court. *San Diego Water Company v. San Diego Flume Company* 108 Cal. 549 (1895), 41 Pac. 495. Cf. Smith and Dowling, *op. cit.*, p. 260.

public service industries. The requirements of the "fair value" concept, aimed to protect corporate property from confiscation, have committted the regulatory agencies to procedures and to rate policies which have supported the "rights" of the controllers of public utility property. Concentration of monopoly power has been given momentum also from another direction. Incorporation laws of most of the states have been notoriously generous and lenient in conferring broad privileges without always making adequate provision for their exercise in the public interest. These broad grants of power, issued with too little regard for the social consequences of their use by private interests, have removed whatever limitations there might have been on concentration of properties in large systems by financial devices. The abuses which came to be so common a feature of public utility operation and control, the commissions have often been without adequate power to check. Thus society committed itself almost unconditionally to monopoly in the conduct of public utility enterprise, because of weakness in the law regarding the scope of corporate activity and deficiencies in controlling institutions, without assuring itself that the benefits of monopoly would accrue to the public.

If one thought deserves summary emphasis at this point, it is that the system of private monopoly which has developed requires that fully adequate discretionary power to control be given to strong and vigorous mandatory commissions. The program depends for success on effective action by administrators of the law unhampered by narrow and restrictive judicial constructions. The experience with commission regulation has been far from reassuring. It is not at all surprising, therefore, that recent trends in regulatory law and governmental action have been in the direction of loosening the reins on competition in an attempt to corral the monopolistic interests which institutional and legal processes as well as economic forces helped to create.

Chapter V

DIRECT COMPETITION (CONTINUED)

Municipal Competition

Reference already has been made to municipal competition in connection with commission action to prevent rate cutting between two plants serving the same area.[1] While cities in which private utilities actually compete with municipal enterprises are the exception and not the rule, municipal operation of public utility plants is present in a sufficient number of places to warrant further attention. Moreover, the increasing agitation for the extension of municipal operation as dissatisfaction with private control grows suggests that competition from this source may become increasingly important. It is necessary at this point to distinguish between competition and displacement. Municipal competition is not synonymous with municipal operation or public ownership, although much writing on the subject makes no distinction between the two. There are comparatively few cases where two plants, one public and the other private, operate in the same locality. It is true, of course, that there is no reason to believe that duplication of public utility facilities is any more desirable now, from the standpoint of efficiency and economy, than it proved to be in the early period of public utility development. This means that when a municipality decides to perform its own public utility services an effort should be made, in order to avoid waste and possible destructive rivalry, to take over the existing private plant. Circumstances may require competitive duplication as a last resort in some cases, as when a private company refuses to sell or demands an exorbitant price for obsolete facilities. The fact remains, as a recent case well demonstrates,[2] that duplication is likely to lead to undesirable discriminatory practices, because each plant is impelled to attract business for itself.

The movement for more municipal operation has been especially directed to the electric light and power industry. Besides a large number of municipal plants in small cities and villages, Los Angeles, Seattle, Jamestown, N. Y., Tacoma, Washington, Cleveland, Springfield, Ill., and Lincoln, Neb. have had city plants for some time. But census figures show clearly the limited significance of municipal electric service in the past for the country as a whole. Private establishments in 1932 gener-

[1] See Chap. IV.

[2] It is reported that the Puget Sound Power and Light Company and the municipal electric plant competing with it have resorted to combined billing, have ignored actual demands in establishing rates for commercial customers, and have yielded to the old practice of submetering in an endeavor to get and hold business. *Public Utilities Fortnightly*, Vol. 20 (1937), p. 738.

ated 95 per cent of all the energy, had 90.8 per cent of all customers, operated 94 per cent of total prime mover horsepower, and received 93.9 per cent of total revenues from electric service. But along with these figures which show private operation to be greatly predominant is included information that over half of the total number of electric plants in 1932 were municipally owned and operated.[3] The same predominance of private control is found in the gas industry. In 1929, municipal gas establishments received only eight per cent of the total revenue from the sale of gas to consumers.[4] In the supply of water service, however, cities have long held the leading position.

The path to municipal operation, and especially to municipal competition, has been beset with a number of barriers. In states having a certificate of convenience and necessity law, municipalities commonly are required to secure permission to operate in the same way as are private companies.[5] In some states the commission has no jurisdiction over municipally-operated companies.[6] But in most cases a commission disposed to favor monopoly is in a position to deny the petition of a municipality seeking to furnish its own public utility service when the community already is being served by a private company. The position of the California commission, which is on record as unwilling to block "a municipality in its efforts to acquire and operate its own utilities,"[7] appears to be an exception to the usual attitude.

In Michigan, Missouri, Illinois, North Dakota, and Wisconsin cities may establish a plant without obtaining a certificate, and the extension of this privilege to other states is being advocated.[8] The proponents of this exemption recognize that competition is economically unsound but contend that the *right* to compete is the only effective safeguard against exploitation by private companies. Their position is that freedom to compete would be used primarily as a threat, but actually exercised only as a last resort. The minority report of the New York Commission on the Revision of the Public Service Commission Law took this stand in recommending that municipalities be relieved from the certificate of convenience and necessity requirement.[9] The recent special investigation

[3]Bureau of the Census, U. S. Dept. of Commerce, *Census of Electrical Industries: Central Electric Light and Power Stations, 1932.* The proportion between private and municipal plants has not changed greatly in the present century. Federal projects are not included in these figures.

[4]Statistics furnished by J. W. O'Connor, Assistant Statistician for the American Gas Association.

[5]Spurr, H. C., "The High Cost of Competition Between Private and Municipal Plants," *Public Utilities Fortnightly*, Vol. 11 (1933), p. 516. See also *Re Bath* (Pa.) P.U.R. 1916E, 692; *Re Catasauqua* (Pa.) P.U.R. 1919C, 48; *Re Schenevus* (N. Y.) P.U.R. 1919E, 735; *Re Hagerstown* (Md.) P.U.R. 1924B, 211; *Public Service Company* v. *Loveland* (Colo.) P.U.R. 1924E, 516.

[6]*West Missouri Power Company* v. *Washington* (1935) (U. S. Circ. Ct. of Appeals) 80 F (2d) 420. Consult also Federal Power Commission, *Electric Rate Survey*, Rate Series No. 6, *State Commission Jurisdiction and Regulation of Electric Rates and Service*, 1936.

[7]*Re Southern Counties Gas Company* (Cal.) P.U.R. 1916D, 887.

[8]MacMillin, F. N., Secretary, League of Wisconsin Municipalities. Letter dated February 23, 1931.

[9]New York Report, 1930, pp. 14, 162, 253, 331.

of public utility conduct by a Massachusetts Commission likewise advised that laws be changed to make it easier for municipalities to establish public plants, but suggested that negotiation for the purchase of the existing plant be required first.[10] In Massachusetts, a municipality cannot purchase an electric plant operated jointly with a gas plant without taking over both. Also, the law is not clear as to whether a city may buy only that portion of a utility property which is used within the municipal boundaries. Another obstacle, which is illustrative of the barriers to municipal operation, is the Massachusetts law requiring a two-thirds vote for two consecutive years by the city council before acquisition of an electric plant.[11] Despite difficulties of this sort, cases on record show that contests for rate reductions which might otherwise have dragged on for years have been brought to a successful conclusion by the threat of municipal competition.[12] The negotiations in New York City in 1936 furnish an outstanding example.

Where there is an indeterminate permit law, the procedure presumably is definite whereby a municipality can get control. The essence of the indeterminate permit is that the monopoly of public utility operation is recognized, but the franchise is subject to the right of a municipality to purchase the property at a fair price. The terminable permit has not been made a feature of public utility law in most of the states, however, despite its theoretical qualifications.[13] The common criticism of the indeterminate permit is that its use depends upon the financial ability of a municipality to achieve public ownership under the law. In most states the borrowing power of cities is restricted by law, and it has been impossible for many of them to carry out the intent of the indeterminate permit legislation. One of the leading students of the subject has observed that "the indeterminate permit is a good type of franchise, if it is easily terminable—not in legal theory only, but in practical financial fact."[14] If municipalities are unable to take effective action, the indeterminate permit law contributes to the intrenchment of private monopoly.

In order to make it possible financially for municipalities to construct a plant or to exercise the option to buy a private system under the indeterminate permit law, a number of states have passed legislation which provides that any municipal indebtedness incurred in financing public

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[10]Commonwealth of Massachusetts, *Report of the Special Commission on Control and Conduct of Public Utilities*, March, 1930, p. 73.

[11]*Ibid.* Cf. Raushenbush and Laidler, *op. cit.*, p. 178.

[12]State of New York, Legislative Document (1936) No. 78, *op. cit.*, pp. 83ff.

[13]Glaeser gives the following states: Arkansas, Colorado, Indiana, Minnesota, Ohio, Oklahoma, Wisconsin, and Illinois. The Bonbright Survey, *op. cit.*, p. 17, credits its specific embodiment to the laws of only five states (Wisconsin, Indiana, Louisiana, Illinois, and New York.) Evidently a number of states have adopted the principle in part, so that authorities differ as to whether or not a real indeterminate permit law is in force. Massachusetts has a law, for example, which is akin to the Wisconsin model (Glaeser, *op. cit.*, pp. 242-246), and so also has Pennsylvania. (*White Oak Light, Heat, and Power Company* v. *Benson* (Pa.) P.U.R. 1916A, 811.)

[14]Wilcox, D. F., "The Indeterminate Permit as a Type of Public Utility Franchise," *Journal of Land and Public Utility Economics*, Vol. 2 (1926), p. 327.

utility operations may be secured solely by the property or income of such enterprise.[15] Such revenue bonds are exempt from the limitation that municipal debt shall not exceed a certain percentage of the value of the taxable property in the community. Many of these laws were passed in order that cities might take advantage of federal assistance in financing the acquisition of local utilities. It is important to note that revenue bonds for this purpose must be approved by a referendum vote of the people as well as by city officials. This reasonable and democratic stipulation has had the unfortunate result of encouraging propagandistic and political activities by vested interests to influence voters.

It needs to be emphasized that an indeterminate permit law really operates to remove the threat of municipal *competition.* In the absence of such a law, a city can begin competitive operation on commission approval as to its convenience and necessity, and not even that requirement need be met in all states. But with an indeterminate permit rule in effect, a municipality cannot legally begin operation without reimbursing the private company for its property. Therefore, strictly speaking, in those states where terminable permit legislation is in force, a municipal plant cannot possibly compete with a private plant, and the private utilities are protected in their monopoly position. Dissatisfaction with this situation is one of the circumstances which has given rise to the demand for laws to exempt cities from the convenience and necessity requirement. The public utilities, so it is said,[16] have made the most of this monopoly feature embodied in the terminable permit procedure and have succeeded in dragging through the courts for years cases in which a municipality is trying to purchase the property of a private enterprise. It is claimed that exorbitant prices have been asked for deteriorated property, full advantage of the attitude of the courts in valuation matters being taken. Severance damages have been a further cause of litigation and delay, which may be expected to discourage cities from making the attempt. Easy legal access to competitive operation is necessary, according to the realists, if these strategic maneuvers are to be defeated. Parenthetically, it might be mentioned here also that the progress of municipal operation probably has been arrested by the policy of using them as sources of profit in lieu of taxes. This practice denies the benefits of the cheapest possible service and allocates burdens where they are not easily borne or justified. Moreover, when rates are higher than necessary for this reason, rate comparisons unfavorable to municipal utilities are likely to be made by those interested in preventing its spread and a useful weapon for propaganda favorable to private enterprise is afforded.

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[15] About twenty states now have laws of this character, most of them having been passed in the last five years. Doying, G. E., "The 1935 Utility Legislation Throughout the States," *Public Utilities Fortnightly,* Vol. 14 (1935), p. 531. See also *Public Utilities Fortnightly,* Feb. 14, 1935, p. 213; April 11, 1935, p. 431; June 20, 1935, pp. 788-789.

[16] MacMillin, F. N., Secretary, League of Wisconsin Municipalities. Correspondence dated February 23, 1931.

It is evident that the development of municipal companies has been retarded, in part, by limitations of a legal and financial character. Still another legal device has played an important part in fostering public utility monopoly in private hands and in deterring the development of public projects which might have challenged the dominant power of the private interests. A recent investigation by the Federal Power Commission assembled for the first time data concerning the use of restraining orders and injunctions to prevent municipal action in the electric service field.[17] One hundred ninety-five public authorities reported that they have been or are being interfered with in the construction, extension or operation of electric plants. It is noted that the greater proportion of these restraints have occurred since 1930, concurrent with the efforts of the federal government to promote such projects. A total of two hundred seventy-eight petitions have been filed against municipal authorities in the period from 1888 to 1935, and these cases do not include those brought against the federal government itself involving the legality of grants from the P. W. A. It is further reported that more than thirty suits against the P. W. A. have been instituted to block loan-grants to municipalities, designed particularly to prevent the T. V. A. from obtaining a market for power.[18] The precise actions sought to be enjoined have included building of a plant, issuing bonds, selling electricity, carrying out construction contracts, holding of elections, and, more recently, acceptance of loans from the federal government. Ninety-one proposed projects have not yet been carried out because of such restraints. In more than ten per cent of all cases involving public electric undertakings, the sponsors have met with delay or defeat and considerable expense because the private interests involved have gained protection from state and federal courts. In addition, there are probably many other cases in which municipalities have refrained even from attempting municipal service because of the legal complications likely to be encountered. After extended litigation, the Supreme Court on January 3, 1938, decided in favor of the government in the Alabama Power Company and Duke Power Company cases involving the constitutionality of P. W. A. grants to municipalities for the construction of public power facilities.[19]

In view of the legal, financial, and vested interest handicaps which have been imposed, municipal operation of public utilities should not be branded a failure or considered to have had a fair trial and been found wanting. There is no doubt that the advantage has been with the private

[17] Federal Power Commission, *Restraining Orders and Injunctions Instituted Against Public Electric Projects* (In response to Senate Resolution No. 123, 74th Congress, 2d Session, submitted February 29, 1936).

[18] *Public Utilities Fortnightly*, Aug. 15, 1935, p. 225.

[19] *Alabama Power Company* v. *Ickes*, 302 U. S. 464, 58 Sup. Ct. 300, 21 P.U.R. (N.S.) 289; *Duke Power Company et al.* v. *Greenwood County*, 302 U. S. 485, 58 Sup. Ct. 306, 21 P.U.R. (N.S.) 298.

companies which have made full use of legal and propagandistic devices to protect their monopolistic control of superior and improving techniques in industries favoring relatively large-scale operations and requiring a steady flow of capital with which to finance new developments and expansion. Several circumstances have combined in recent years to give an impetus to municipal projects for public utility, particularly electric, service. Not the least of these has been accumulating indignation in regard to the financial exploits of huge private systems controlled by absentee holding corporations. At the same time, lower costs of capital equipment, improvement in the efficiency of small installations, and financial assistance by the federal government have put municipalities in a better position to take direct action by providing their own service. It is not implied, however, that all the obstacles mentioned above have been removed.

Most municipalities either have not elected to serve outside their city boundaries or have been legally barred from so doing.[20] In many other cases it has been customary to charge higher rates beyond city limits.[21] It has been noted previously that municipal operation of electric plants has been limited for the most part to smaller cities and villages. Realizing that small and local municipal plants are at some disadvantage compared with large integrated private systems, it has been suggested that municipalities be permitted and encouraged to associate to form "power districts" in order to seek the economies of production and management of a large system, with further provision for interconnection with similar systems. By this means, it is intended that municipalities thus joined together should have access to whatever advantages of large size now are available to private systems. Dissatisfaction with and the desire to combat the "power trust" and other private utility monopolies where regulation has failed to do so is the central feature of the proposal. Believing that "the most potent force tending toward effective public utility regulation is to be found in either potential or actual public competition," the minority report of the New York Commission on the Revision of the Public Service Commission Law recommended the legalization and formation of municipal power districts.[22] The same idea might be applied, as it has been in a few cases, to the problem of water supply.

Led by Wisconsin in 1931, at least eleven states (Oregon, Washington, Nebraska, Alabama, California, Nevada, New Mexico, South Dakota, Texas, and Tennessee) have enacted legislation to permit the formation of power districts.[23] Other states, with the same purposes in mind, have

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[20] Four states do not permit it at all, and in thirty other states the right is conditioned in one or more respects. Federal Power Commission, *Electric Rate Survey*, Rate Series No. 6, *State Commission Jurisdiction and Regulation of Electric Rates and Service*, 1936, pp. 7-8.

[21] New York Report, 1936, p. 57.

[22] New York Report, 1930, p. 332.

[23] Doying, G. E., "The 1935 Utility Legislation Throughout the States," *Public Utilities Fortnightly*, Vol. 16 (1935), p. 531. See also *Public Utilities Fortnightly*, Aug. 29, 1935, p. 294.

provided for statewide electrification authorities. Membership corporations have been the particular subject of legislation also, the aim being to cooperate in the attainment of the objectives of the federal Rural Electrification Authority.[24] While it is undoubtedly too early for a final pronouncement, the power district movement has not as yet assumed major importance, even in the few states where the device has been legalized. For this, the long tradition of municipal isolation in governmental activity probably accounts. Administrative difficulties and jurisdictional controversies have already been encountered.[25]

From many directions, agitation for public competition is gaining momentum, and it is a factor to be reckoned with. A committee composed of prominent students of public utility affairs are on record as despairing of the revivification of regulation by governmental authority. From their point of view, it is "not intelligent statecraft to continue to support a subversive private control and to seek to cripple its evil influence through increased severity of public regulation." The resurrection of competition is held to be necessary in the public interest. The very fear which private interests have of public competition, as demonstrated by their unceasing propaganda against it, is cited as an indication of the probable effectiveness of such a program. The plea is to conduct a fair contest, for then "the eventual survival of either or both of these means of serving the public needs will depend upon their comparative capacity for public service."[26]

Here are interesting data for the student of the evolutionary nature of social attitudes and institutions. Competition, once renounced as wasteful, is to be redrafted as an ally of legal control, its inefficacious successor. Here is a proposal to combine unecomomic competition with phlegmatic regulation, on the hypothesis that two failures fused spell success. Regardless of whether or not one agrees that along this road lies the way out, he is bound to admit that some further experimental effort is warranted by the existing unsatisfactory state of affairs. Nor can one be unimpressed by this trend in public opinion or blind to what it may portend for the future. Not the least significant question which this proposal brings to the fore is whether or not public competition is to be an opening wedge on the way toward complete public ownership and operation of those enterprises which are included in the public utility category.

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[24] *Rural Electrification News.* Issued monthly by the R. E. A., Washington.

[25] *Public Utilities Fortnightly,* Jan. 16, 1936, p. 149.

[26] Report of the Committee on Public Utilities of the Progressive Conference, held at Washington, March 11 and 12, 1931. Transmitted on October 8, 1931, to Senator Norris, Chairman of the Committee. The Committee included the following: D. R. Richberg, Chairman, P. U. Kellogg, J. D. Ross, M. L. Cooke, Amos Pinchot, W. E. Mosher, Judson King, J. C. Bonbright, W. S. Bemis, T. Kronshage, Jr., C. D. Thompson, Mrs. Ann Bursch, W. J. Spaulding, Kenneth Harlan, E. W. Morehouse, E. N. Nockels, John M. Baer, D. E. Lilienthal, L. E. Bemis, H. T. Hunt, C. E. Merriam, Newton Jenkins, M. G. Glaeser, and Stephen Raushenbush.

Rate Comparison as a Means of Control

From several directions has come the suggestion that it will not be necessary to go the entire distance from virtually complete private domination to a system where operation and control by some governmental unit or units is equally general. It is advised that state laws be modified to make it easy for municipalities to compete when they cannot get good service at reasonable rates from private companies. The emphasis is on potential competition and "competition by comparison" rather than on widespread actual public competition. That most cities have not been able, because of legal and financial barriers, to offer an effective threat of this sort was shown in the preceding section. In view of these limitations upon the action of the local governments, it has been suggested that the development of a few large-scale, efficiently operated, interconnected public enterprises under the direction of the federal government to serve as standards for rate comparison would exert the force necessary to keep private utility rates within reasonable bounds.

Rate comparisons between localities have been discussed and applied many times. The favorite device of the protagonist, whether private or public ownership advocate, is to compare either American private rates with Canadian (Ontario) public rates, or private rates with municipal rates in the United States. On this point, it is significant that two recent public reports, based on assembled data, disclose that municipal rates on the average are lower than private rates in this country—after allowance for taxes, depreciation, and reasonable return on capital—except, in some cases, for industrial power and in some small towns with isolated municipal plants.[27] The private companies also have often cited rate comparisons which put them in a favorable light. Thus it may be shown that the *average* rate for service by a large public utility company is about three cents. But the real situation as to the majority of residential customers may be concealed if it is not disclosed that the average is weighted down because most of the current is sold to large industrial power customers at very low rates based on increment cost and required by the alternative of industrial plants to generate their own power. Municipal plants in this country, on the other hand, usually deliver more of their output to domestic customers. To have any probative value, rate comparisons must be for specified quantities of service rendered under like conditions.

That both sides are able to prove their cases, to their own satisfaction at least, suggests that such a method of determining the propriety of charges in any particular circumstance must be used cautiously. Only

[27] Federal Power Commission, Electric Rate Survey, Rate Series No. 5, *Comparative Rates of Public and Privately-Owned Electric Utilities*, 1936. Power Authority of the State of New York, *Report on Cost of Distribution of Electricity*, 1934.

where it is possible to account for differences in costs of production and market conditions between the "measuring rod" and the enterprise or system to be measured can such a procedure be relied on. But where it is possible to determine, with accuracy, all reasonable elements of cost for a specific system, the purpose of regulation has been achieved, and cost rates can be imposed by regulatory authorities without resort to comparison with other plants where conditions may not be the same. However, evidence concerning differences in productive and financial efficiency and rate policy between public and private systems should not be ignored.

Regulatory commissions have taken rates in other communities into account many times in their deliberations, but they have been careful to specify that while such comparisons may be considered where they are helpful, they are not controlling unless all the circumstances in the communities and plants are equal or differences can be isolated and measured.[28] Even then, there would be no assurance merely from the comparison that the rates are not higher than they should be in both places. The courts have not permitted the commissions to give controlling consideration to rate comparisons.[29]

The comparison of rates between localities has produced a demand for uniformity of rates within one state or one ownership group. The main issue involved is whether, other things being equal, a public utility may charge a lower rate in one locality where it must meet competition than in surrounding territory where competition does not exist. Competition as justification for inequality in rates between localities has long been upheld by federal courts in railroad cases,[30] but state courts have not been so favorable to discrimination between regions.[31] With reference to the local public service corporations, the principle does not seem to be settled. The general rule is that a public utility company is not warranted in charging more or less in one part of the territory than in other parts for the same service, *under similar circumstances.*[32] The issue, then, is whether or not competitive conditions in one section render the circumstances dissimilar.

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[28]The supreme court of Illinois has taken this position. See *Public Utilities Fortnightly*, June 6, 1935, p. 738. See also *Murchie* v. *St. Croix Gas Light Company* (Me.) P.U.R. 1917B, 384; *Re Kansas City Electric Light Company* (Mo.) P.U.R. 1917C, 728; *Greensburg* v. *Westmoreland Water Company* (Pa.) P.U.R. 1917D, 478; *Re Bronx Gas & Electric Company* (N. Y.) P.U.R. 1917D, 777; *Morrill* v. *Wisconsin Telephone Company* (Wis.) P.U.R. 1917C, 339; *Stoll* v. *Brooklyn & C. Bay Light & Water Company* (Md.) P.U.R. 1918A, 634; *Seattle* v. *Seattle Lighting Company* (Wash.) P.U.R. 1920C, 864; *Re Paulsboro Water Company* (N. J.) P.U.R. 1924C, 263; *Bassett* v. *Merchants' Heat & Light Company* (Ind.) P.U.R. 1919C, 475.

[29]*Ibid. Stark County* v. *Public Utility Commission* (Ohio Sup. Ct.) P.U.R. 1921D, 542, 131 N. E. 157; *Re Lincoln Traction Company* (Neb. Sup. Ct.) P.U.R. 1919C, 927, 171 N. W. 192.

[30]Wyman, Bruce, *Public Service Corporations*, Vol. II, Sec. 1377. The following cases are among those cited: *Cincinnati, N. O. & T. P. Railway Company* v. *Interstate Commerce Commission*, 162 U. S. 184; *Interstate Commerce Commission* v. *Alabama Midland Ry. Company*, 168 U. S. 144; *Interstate Commerce Commission* v. *Louisville & N. R. R. Company*, 190 U. S. 273.

[31]*Ibid.*

[32]*Re Southern California Edison Company* (Cal.) P.U.R. 1921D, 65; *LaClede* v. *LaClede Electric Light Company* (Mo.) P.U.R. 1925E, 373; *Re Rockland Electric Company* (N. J.) P.U.R. 1915D, 683.

A case often cited as opposed to interregional discrimination is the opinion of the Oregon commission that a rate for electricity lower in one city to forestall threatened municipal competition than in a neighboring town is unjustly discriminatory where the lower rates are sufficiently remunerative to be applied fairly to all the towns.[33] The case in question did not deny the principle of lower rates to meet competition where the higher rates in other sections were not unreasonably high considered by themselves. The West Virginia, Ohio, and Massachusetts commissions have specifically sanctioned the practice of lowering rates at competitive points in order to protect investment.[34] The Massachusetts commission ventured the opinion that it is "well established that a company may, to meet competition, charge relatively lower rates upon certain lines, provided no higher rates are charged upon other parts of its system than would otherwise be permissible."[35]

On the other hand, Nebraska law makes it difficult, if not impossible, to justify discrimination between communities in order to meet competition in one of them.[36]

The charging of lower rates in competitive localities appears no different in principle than the charging of differential rates within a single locality. If the competitive class of business must be offered an inducement rate or be lost, and if the lower rate does not place an additional burden on the non-competitive business, the difference in rates has not been considered to be unjust discrimination.[37] The danger is that the principle is so easily abused. The admission of the competitive principle into rate making always presents a difficult problem. The Pennsylvania commission decided in an early case that where competition is such that failure to meet it would cause a loss of business and destroy the investment in that part of the property, consideration must be given to competition in the formation of rates. The same case continues with the observation that "what constitutes such competition as will create a dissimilarity of circumstances and conditions must be determined from the facts of each case as it arises."[38]

Municipal competition has an important bearing on this problem, because a private utility will want to lower its rates in a municipality wherein the city is competing, while maintaining a higher scale in non-competitive districts. In such cases it is necessary to balance carefully a company's interest in protecting its investment from competition with

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[33] *LaGrande Commercial Club* v. *Eastern Oregon L. & P. Company* (Ore.) P.U.R. 1915D, 909, 927.

[34] *Re United Fuel Gas Company* (W. Va.) P.U.R. 1917A, 923; *Cole* v. *Adams County P. & L. Company* (Ohio) P.U.R. 1927C, 73.

[35] *Re Massachusetts Northeastern Street Railway* (Mass.) P.U.R. 1917A, 331.

[36] *Compiled Statutes 1922*, paragraph 3432. Cf. *State* ex rel *Spillman* v. *Interstate Power Company* (Neb. Sup. Ct.) P.U.R. 1929E, p. 358.

[37] For further discussion on this point see Chap. VIII.

[38] *Re Bethlehem City Water Company* (Pa.) 3 P. S. Reg., 413.

the interest of the surrounding territory in not bearing the burden of that competition. The growing agitation for state-wide public utility rates and the movement to eliminate the disparity in rates of a company operating in several localities, where the spread cannot be traced to differential costs, will operate against the practice of meeting municipal competition in this way.[39]

There already is evidence to support the conclusion that attempts by private companies to eliminate municipal competition by pushing it to the wall will be halted quickly by the courts, if not by the commissions. The Georgia Power Company was challenged by the commission for lowering its rates fifty per cent in Cordele, where a public water power project had been put into operation.[40] The power company was asked to show cause why its rates should not be reduced to the same extent over the entire state. The company defended its action on the ground that it had no choice but to protect its investment, and that the right to meet competition cannot be denied a public utility. To that the commission acquiesced; but what the company did not explain satisfactorily was the reduction of fifty per cent, when the public project adopted a schedule of rates only ten per cent below the original rates of the private utility. The commission had pointed out, and so also had the Georgia Supreme Court[41] in the preliminary battle over the right of the commission to interfere, that the latter had no power to fix minimum rates; hence that point was not at issue. The commission was concerned, however, with preventing any unjust discrimination against other communities served by the Georgia Power Company. Agreement finally was accomplished when the private company raised its rates to conform with those levied by the municipality. There was drawn in this case a clear distinction between meeting competition in rates and trying to eliminate a competitor by drastic rate slashes. In a similar, and still more recent decision, the California commission ruled that the Pacific Gas and Electric Company was entitled, in its efforts to protect an investment previously made, to lower rates to meet local municipal competition without reducing rates throughout the entire area served.[42] The Texas legislature enacted a law in 1935, based on the allegation that municipal plants had been put out of business by discriminatory rates and unfair competition from private companies, which provides that private utilities may reduce rates to the level of those established by a municipality but not lower.[43]

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[39] *Re Southern Bell T. & T. Company* (Ga.) P.U.R. 1921C, 833; *Public Utilities Fortnightly*, Vol. 3 (1929), p. 228; Maltbie, M. R., *Rate Making*, 1930; New York Report, 1930, p. 247.

[40] *Re Georgia Power Company* (Ga.) P.U.R. 1931E, 449.

[41] *Georgia Public Service Commission* v. *Georgia Power Company* (Ga. Sup. Ct.) P.U.R. 1931B, 225.

[42] *Modesto Irrigation District* v. *Pacific Gas & Electric Company* (Cal.), *Public Utilities Fortnightly*, Vol. 8 (1931), p. 764.

[43] *Public Utilities Fortnightly*, Feb. 14, 1935, p. 214; and April 25, 1935, p. 501.

The comparison of rates between localities has been emphasized from another standpoint. It has been claimed that the desire of a public utility company to attract industries using utility service for power or for heat will act as a rate-restraining force. There are cases on record in which the commission has, on application of a utility, considered the possibility of inducing industries to locate in the state by offers of favorable rates. In some cases such rates have been sanctioned,[44] and the Louisiana commission recommended that utility companies adopt rates which would entice industries into the state.[45] Other commissions either have vetoed special rates for this purpose,[46] or have scrutinized them very carefully to make sure that they were not at the expense of the domestic consumers.[47]

The argument that utilities compete with each other for the location of industry and that this constitutes a rate regulating force is unconvincing for several reasons. Even though it could be granted that companies do consider the effect of rates on the location of industry and endeavor to make their industrial rates low in accordance with that belief,[48] the domestic consumer does not receive any protection from such competition. In fact, it is conceivable that the small consumer might be charged more, to offset unduly low rates granted to industries, aggravating the unjustifiable spread, so it is said, that now exists between the charges made to large and small users of utility service. A second consideration which minimizes the argument for inter-utility competition is that with the present high degree of concentration of control of public utility enterprise, it is not reasonable to suppose that operating units in various cities are eagerly underbidding one another to entice industrial concerns into their respective territories.

Location-of-industry competition is further invalidated when it is considered that in most industrial processes the cost of power and fuel is not a very significant item in the total cost of production. The Census of Manufacturers for 1927 shows that in most industries power and fuel costs are less than two per cent of the total value of the manufactured product.[49] The cement, ice manufacturing, glass, automotive, and paper industries are exceptions to the general rule.[50] A survey by the Metropolitan Life Insurance Company, in collaboration with the National Electric Light Association,[51] found that there are many factors which

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[44] *Maplewood Laundry* v. *St. Louis County Water Company* (Mo.) P.U.R. 1929E, 129.
[45] *City of Shreveport* v. *Southwestern Gas and Electric Company* (La.) P.U.R. 1929E, 15.
[46] *Re Water Commission of Wausau* (Wis.) P.U.R. 1928D, 820.
[47] *Crystal Ice and Ice Cream Company* v. *Oklahoma Natural Gas Company* (Okla.) P.U.R. 1916A, 206.
[48] See Cameron, M. K., "Rate Reduction as a Measure of Commission Efficiency," *Public Utilities Fortnightly*, Vol. 6 (1930), p. 259.
[49] Morrow, L. W. W., "One Price for Power," *Electrical World*, Vol. 95 (1930), p. 1332. This article is based on a paper presented at the World Power Conference, Berlin, 1930.
[50] *Ibid.* The percentages for the five industries mentioned are respectively: 20.5%, 15.8%, 10.8%, 8.6%, and 6.5%.
[51] Metropolitan Life Insurance Company and N. E. L. A., *Industrial Development in the United States and Canada, 1926-1927.*

contribute to the decision as to where a specific industry shall be located. Markets, labor, transportation, raw materials, available and cheap factory sites, taxes, living conditions, and the presence of related industries weigh more heavily than fuel and power costs as determinants of where a new industry will locate. Data presented at the World Power Conference in Berlin (1930) show that as a result of economies of production and interconnection, differences in the cost of power for any given industry in the various market areas of the United States have practically been eliminated.[52] These investigations all contribute to the conclusion that the location of particular industries in a region, with notable exceptions such as the concentration of the electro-chemical industries in the vicinity of Niagara,[53] is to be explained on other grounds than the comparative cost of power and fuel.

Federal Power Projects

Recent activity by the federal government in the projection and development of a planned use on a large scale of the nation's water resources, of which the T. V. A. is to date the outstanding example, has attracted much interest and aroused heated controversy. While various proposals have been made from time to time extending over many years for the control and utilization of our major water resources,[54] it is only in recent years that the power aspects of the matter have come to the fore. Disappointment over the results of regulation by state commissions and efforts to provide a more effective means to control the highly concentrated private power industry prompted the suggestion that a number of federal water power systems be developed to serve as "yardsticks" to gauge the reasonableness of rates for electric service. The proposal calls for a few large-scale projects strategically located for comparative purposes and designed to take advantage of the potentialities of such river systems as the Tennessee, Columbia, Colorado, Mississippi, and St. Lawrence for power production, flood control, navigation and other purposes. As to electric power, it is submitted that a "measuring rod" would be afforded to guide regulatory authorities and public opinion in the determination of fair charges for electrical energy. It is intended that a standard of cost for electricity produced with economical use of the most advanced technology and with artificial and unnecessary costs associated

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[52] Morrow, *loc. cit.*

[53] ". . . . power costs are of great and immediate concern to the electro-chemical industry. The amount of power required per ton of product is usually so great that power, which by other standards is cheap, is prohibitively expensive for electro-chemical applications." Brallier, P. S. (American Electrochemical Society), "The Economic Relation of Power to the Manufacture of Electrochemicals," *Transactions of the World Power Conference*, Vol. 1, Sec. 2, p. 310. Berlin, 1930.

[54] Muscle Shoals Commission, *A Plan for the Use of the United States Properties on the Tennessee River . . . .*, 1931, pp. 95-96; U. S. Department of War, *Report from the Chief of Engineers on the Tennessee River and Tributaries* (House Doc. No. 328, 71st Cong., 2d Sess., 1930); State of New York, *Report of the St. Lawrence Power Development Commission*, 1931, pp. 17, 20.

with private financial practices eliminated would be obtained. Thus a "yardstick" would be afforded which the private interests would feel impelled or would be forced to meet. The social purpose of this device is "to show the private utilities that it is unwise to claim all that they can now obtain through the present weakness of the public service commissions, and to give the consuming public a thorough understanding of the extent to which the present system of regulation falls short of meeting the changed conditions in the power industry."[55]

That participation by the federal government in the power business can be expected to restrain the exploitative tactics of a strongly intrenched private monopoly is a reasonable assumption. On strictly theoretical grounds, however, the "yardstick" concept is somewhat vulnerable. The allegation that results derived from a few federal projects can be accepted as a fair standard of reasonableness *per se* is questionable. Only when conditions are similar or differences can be measured is this method of rate comparison logically valid. Those who have opposed governmental action in this field have, with some justification, objected to rate comparisons between enterprises conducted under dissimilar conditions with respect to time of construction, kind and accessibility of energy sources, scope of operations, and the nature and density of markets. On the other hand, there is something to be said for the device as an approximate test of the relative technical economy and efficiency of different methods for providing power service and as a rough measure of the comparative devotion to ideals of public service in the control and conduct of business policy. And while the "yardstick" device has theoretical imperfections (its shortcomings have been thoroughly publicized by the private companies), there is another significant point to consider. The federal power "yardstick" represents an effort to demonstrate that with careful planning of facilities and a forward-looking rate policy liberal use of electricity and low rates are economically compatible with a long-term recovery of necessary costs through revenues.[56]

Regardless of the limitations of the "yardstick" as a precise measure of reasonableness under varying conditions, it is, as noted above, a realistic weapon with which to combat intrenched monopoly which uses its position to obtain excessive profits. In fact, it appears that the device is more aptly described as a "birch rod," although this observation implies, perhaps, an unintended condemnation of its use. Evidence already at hand suggests its effectiveness as a lever to bring about rate reductions.

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[55] Mosher, W. E. and others. *Electrical Utilities—The Crisis in Public Control,* Chap. VIII.

[56] "What was needed was an actual demonstration (1) that the electrical power industry had become involved in a vicious circle of high prices and low consumption, and (2) that there was a means of escape from this predicament. The difficulty was, despite a gradual increase in power consumption, and despite, also, a gradual reduction in retail rates, that electricity was still too expensive to be widely used. The utilities did not think it advisable to make drastic rate cuts in advance of wider use. The consumers, on the other hand, would not buy additional current in large amounts, or would not buy current at all at the then existing rates." *T. V. A., 1933-1937,* p. 28.

This has been noticeable particularly, but not solely, in those regions where private companies have been affected or threatened.[57]

It is in accord with the purpose of this study to consider especially the competitive aspects of the federal power program. On this point, there has been a heavy barrage of complaints against the policy of governmental competition with the private enterprise of its own citizens. It has been alleged that because the cost of power provided by the government has been understated and because the public projects are subsidized with federal funds it will be impossible for a private enterprise to compete. It may be expected that objections of this nature would be forthcoming from and perhaps exaggerated by those interests whose continued monopolistic control of the power industry is threatened. It is not necessarily true that prudently organized and conservatively financed companies are bound to suffer. The expressed purpose of the federal program, as exemplified by the Tennessee valley development, is to combat only those enterprises and practices which are inimicable to the public interest. In a well conceived national power program, provision can and should be made for the protection of and cooperation with sound and adequate private systems. In fact, the experience thus far does not support the contention that established enterprises will be destroyed by the activity of the government in the Tennessee valley. Average residential consumption in the territories served by leading private companies in the southeastern part of the United States has increased since 1933 to the point where consumption in this area now considerably exceeds the national average, whereas it had long been one of the most backward regions in this respect. Significant also is the fact that financial gains in gross and net revenues were made at the same time by the companies, "despite considerable doubt of the validity of some capital structures."[58] To the extent that economy in organization and use of resources combined with a really promotional rate policy can effect reductions in cost and rates, the complaint of "unfair" competition will not bear examination. The social purpose of economic competition is to seek lower costs through adoption of the most efficient techniques and by the elimination of obsolete methods in the financial as well as the technical field. There always is a temptation to brand as "unfair" any new manifestation of competition which challenges the gains or the survival of established enterprises, institutions, and practices.

Nevertheless, widespread duplication of facilities for the sake of com-

[57] "While final statistics must await the completion of the series, the data already examined show that a vast number of rate changes have occurred in the two-year period since the first national rate survey was made. These changes have been almost entirely reductions, largely in communities where the rate levels had previously been comparatively high." Federal Power Commission, Release No. 300, statement by Acting Chairman Clyde L. Seavey, November 23, 1937.

[58] Lilienthal, D. E., "Is T. V. A. Really Hurting Private Utilities?" *Public Utilities Fortnightly*, Vol. 17 (1936), p. 741.

petition is not, from the point of view of economy, a desirable solution of the power problem. As has been stated before, with reference to municipal competition, there is no ground for the assertion that a policy of mere duplication of power facilities, if pursued without restraint, will be any less wasteful of resources or more stable than in the early history of the electrical industry. A prolonged competitive struggle between public and private systems is not an attractive prospect from the point of view of economy in the use of resources. While the government, in an effort to remove the abuses which have prevailed in the private power industry, could curtail monopoly profits by a policy of indiscriminate duplication, the accomplishment of this desirable objective would not be a real economy if a general condition of excess capacity in technologically adequate facilities were to result. If only obsolete facilities are displaced and if power facilities as a whole are kept within the limits of the nation's potential power requirements at reasonable rates, however, wasteful excesses in capacity will not arise. And if private monopoly can be subjugated in no other way, the provision of adequate power at reasonable rates may require a realistic and drastic policy, with some sacrifice of economy.

On this point, the statement of power policy by the T. V. A., if adhered to, is reassuring. It was announced in 1934 that "from the outset the Authority recognized that in the disposition of its surplus power the interests of existing privately-owned utilities should be given every consideration consistent with the Authority's paramount public obligations. Accordingly, negotiations were entered into for the purchase of distribution and transmission facilities needed to carry out the Authority's obligation to market its surplus power. No duplicating or competing facilities have been erected by the Authority."[59] In the same report it was declared that while the public interest in the widest possible use of power must prevail over private interests when the two conflict, "every effort will be made . . . . to avoid the construction of duplicate physical facilities, or wasteful competitive practices."[60] It should be noted in this connection also that the Federal Power Commission, after extended study, found no support for the statement that the country is faced with the prospect of a redundancy of power.[61] It reported instead that the legitimate future needs of the nation require a marked increase in power producing facilities if a shortage is not soon to occur.

The Tennessee valley program has been greatly hindered to date by litigation sponsored by private companies intent upon protection of their vested interests. Constitutional challenges and injunctions have been a

[59] Tennessee Valley Authority, *Annual Report, 1934*, p. 3.
[60] *Ibid.*, pp. 22-23.
[61] Federal Power Commission, *National Power Survey, Interim Report*, Power Series No. 1, 1935.

major factor in delaying the development of a market for T. V. A. power; and some of these legal issues have not yet been settled by the courts four years after the inception of the project.[62] Some progress has been made toward a removal of these legal barriers,[63] and it seems likely now that the major difficulties in this respect have been overcome. In a forceful opinion delivered on January 20, 1938, the Sixth Circuit United States Court of Appeals denied the claim of eighteen private utility companies that production and distribution of electric power by the federal government under the T. V. A. is unconstitutional.[64] It has been announced that the latter decision will be appealed to the United States Supreme Court.[65]

The situation has developed into what might aptly be described as a "competition of strategy." The private companies operating in the region in 1936 tendered an olive branch in the form of a proposal for a "power pool" of private and public facilities and their output.[66] The staunchest advocates of the federal power program, of whom Senator Norris is typical, have been unwilling to make such a deal, on the ground that to do so would be to capitulate to the very interests and evils which the program was intended to check. Their fear is that direction and control of a coordinated system would be dominated by private financial interests who would thwart the drive to provide cheap electricity in abundance. Following the Supreme Court decision upholding the constitutionality of P. W. A. grants for municipal power plants,[67] the Commonwealth and Southern Corporation indicated a desire to sell its properties in the T. V. A. region to the government.

A recent disturbing development in the rate policy of the T. V. A. is probably attributable to the legal barriers which have impeded the creation of the intended market for T. V. A. energy. It is a cardinal feature of the law which established the T. V. A. that preference should be given to cities, rural associations, and other public bodies in the sale of power, a stipulation which is consistent with the aim to increase the use of electricity in the home and on the farm. With power available and its disposition imperative if waste of available energy is to be avoided, there is some indication that the T. V. A. may be drifting toward the same policy of preferential rate treatment of large industrial customers for which private companies often have been criticized. What appear to be very generous contracts have been made with The Aluminum Company

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[62] Tennessee Valley Authority, *Annual Report: 1935*, p. 58; *1937*, p. 366; *Tennessee Valley Authority—1933-1937*.

[63] *Ashwander et al.* v. *Tennessee Valley Authority et al.*, 297 U. S. 288.

[64] *The Tennessee Valley Electric Power Company et al.* v. *Tennessee Valley Authority et al.*

[65] Associate Press despatch, Jan. 21, 1938.

[66] *Public Utilities Fortnightly*, Nov. 5, 1936, p. 652; Feb. 4, 1937, p. 191; Feb. 18, 1937, p. 246.

[67] *Alabama Power Company* v. *Ickes*, 302 U. S. 464, 58 Sup. Ct. 300, 21 P.U.R. (N. S.) 289; *Duke Power Company et al.* v. *Greenwood County*, 302 U. S. 485, 58 Sup. Ct. 306, 21 P.U.R. (N. S.) 298.

of America, the Arkansas Power and Light Company and several chemical companies.[68] These cases may portend a "dumping" policy based on opportunistic grounds instead of adherence to the goal of cheap electricity for residential customers and farm operations. An examination of the T. V. A. standard rate schedules reveals clearly the nature of the original intention.[69]

The competitive aspects of the federal program for the development and use of water resources, particularly for power purposes, have been examined at some length because to do so is directly pertinent to the subject and scope of this study. Moreover, it is the competitive features of the movement which have been given almost exclusive attention in public discussion. This emphasis on competition, "yardsticks," and "birch rods" has been due to political strategy of doubtful wisdom and to the defensive propaganda of those wanting to make their opposition as convincing and effective as possible. It must be pointed out, however, that the great amount of publicity given to allegations of "unfair competition," "violation of the rights of investors," and "unsound subsidies" has tended to conceal the fundamental issues at stake and has screened from view the deeper significance of the program. A sound appraisal of the potentialities of these projects simply cannot be made as long as they are viewed only, or even in major part, as an expedition to punish monopolistic private utilities which may not have adhered to high social standards in their activities in the past.

The water resources program, far from being merely a manifestation of competition, marks the beginning of a long-range effort to plan for the socially effective control and use of natural resources on a coordinated basis. It represents a consciousness translated into action of the importance of rational and full use of nature's resources. It denotes a change in social outlook, an adaption of institutions and methods to cope with new problems and to seek social objectives not heretofore considered. It is a case of technological and institutional displacement rather than competition; but here as in other situations of comparable nature, the underlying significance of an evolutionary change in social institutions, policies and techniques is likely to be misrepresented by opposition groups and overlooked by the near-sighted who focus their attention on the temporary competition which accompanies the transition. It is not to any important degree an adventure in competition; it is an essentially new phenomenon or type of venture, different from existing private undertakings designed to furnish one service alone—electricity. The private

[68] Tennessee Valley Authority, *Annual Report*, 1937, Appendix A, especially pp. 150, 192, 294, 302, 309, 315, 322. Several of these contracts were discussed and defended by Mr. Lilienthal in the March, 1938, conferences between President Roosevelt and the three directors of the T. V. A. *Removal of a Member of the Tennessee Valley Authority*, Message from the President of the United States, Sen. Doc. 155, 75th Cong., 3d Sess., 1938, pp. 22-25, 30-34, 48.

[69] Tennessee Valley Authority, *Annual Report, 1935*.

utilities, in deploring "unfair public competition," have, with an inconsistency that is apparent, at the same time expressed doubt as to their ability to compete with this new type of long-range, integrated, multiple-benefit federal project.

Attempts have been made to discredit these projects by pointing out that their cost will not, in all probability, be covered entirely by revenues from the sale of electric power. With respect to this objection, it must be taken into account that the program contemplates the provision of various social benefits and services in addition to cheap and abundant power. In some cases power is even a relatively minor consideration. Where navigation, flood control, reforestation, control of soil erosion, development of recreational facilities, preservation of wild life, reclamation and rehabilitation of areas, and regeneration of economically distressed people are involved jointly with the generation of power, it is at the very least a fair question whether the power element in the integrated program should be expected to bear the entire cost. Power, in these multiple-purpose undertakings, simply cannot be considered a thing apart. Much of the controversy over these multiple-purpose projects centers around the question as to how the joint costs should be allocated.[70] Those most interested in cheap power would minimize the allocation of costs to power. They would define the cost of power in terms of the strictly separable outlays for power production and distribution; and the joint costs, according to this view, would be considered a general governmental expenditure incurred for the other benefits and to be covered in major part by taxation. At the other extreme, it is held that all the costs should be assessed against power production, either because of a desire to afford the greatest protection from cheap power to existing power facilities or because it is considered that the projects should be "self-liquidating" and that power represents the principal or sole marketable, revenue-producing utility rendered. Most of the other benefits of the integrated projects, however valuable in a social sense, cannot be reduced to precise monetary expression. Neither are the benefits traceable to particular individuals, groups or localities, except in part and in some instances. They are chiefly general and national in their significance rather than specific and local, and many of these intangible benefits, moreover, will accrue not immediately but over a long period.

Under these conditions, known methods of costing now applied in private enterprise afford no basis for a scientific allocation of the joint costs or their relationship with special benefits in an individualistic sense. Between the extremes as to cost allocation policy mentioned above, therefore, there is room for many shades of opinion, many of which are certain

[70] Gray, H. M., "The Allocation of Joint Costs in Multiple-Purpose Hydro-Electric Projects," *American Economic Review*, June, 1935, p. 224.

to be colored by special interest. In the final analysis the issue must be decided by the crystallization of diverse opinions and special interests into a socially effective judgment as to what the national policy shall be and what the general welfare, however conceived, requires.[71] This suggests the necessity for a careful consideration of all the aspects of these integrated undertakings to assure as far as possible that the total of the various future benefits will at least equal the costs and that the burdens will be within the limits of the nation to bear in taxation. It follows, also, that the system of taxation, to the extent that taxation is a factor, should be so ordered as to be consistent with the objectives sought. A government, it is true, need not be confined to the profit and loss, self-liquidating rules of private enterprise. Nevertheless, there are problems here which require an extremely high order of vision in planning and ability in organizing, directing, and most of all in coordinating the various phases of the projects if they are, in fulfillment, to measure up with potentialities.[72]

Mutual Associations

Brief mention needs to be made of the "competition" of mutual companies[73] with privately operated public utilities. This type of organization has, until recently, been limited almost entirely to the telephone business. Even there, it has been confined largely to rural lines, which probably function as mutual associations in most cases because the private companies have not seen fit to develop the business in outlying sections where it is doubtful that the business will yield a profit. Many of them are so small and restricted in scope that the government does not

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[71]It is interesting to note the general nature of the language employed in prescribing the cost allocation policy to be followed in connection with the Bonneville project on the Columbia river. Public Act No. 329, 75th Congress, 1st sess. says, in part: "Schedules of rates and charges for electric energy produced at the Bonneville project . . . . shall be fixed . . . . with a view to encouraging the widest possible use of electric energy . . . . Rate schedules shall be drawn having regard to the recovery . . . . of the cost of producing and transmitting such electric energy, including the amortization of the capital investment over a reasonable period of years . . . . In computing the cost of electric energy developed from water power created as an incident to and a byproduct of the construction of the Bonneville project, the Federal Power Commission may allocate to the costs of electric facilities such a share of the cost of facilities having joint value for the production of electric energy and other purposes as the power development may fairly bear as compared with such other purposes." Federal Power Commission, *Seventeenth Annual Report, 1937*, pp. 12-13.

On February 9, 1938, the Federal Power Commission announced its plan for the allocation of costs on this project. The initial power development, to be completed in 1938, is estimated to cost $9,180,500 for facilities intended solely for power purposes. The power facilities nearing completion comprise approximately one-fifth of the probable ultimate installation. The Commission has allocated, in addition to the direct outlays for power, $2,501,900 of the total estimated cost to June 30, 1938, of facilities to be used jointly for navigation and power purposes. The latter figure is derived from the decision to allocate to power 32.5 per cent of the cost of facilities having joint value for power and other purposes. The total estimated cost of such facilities to June 30, 1938 is $38,490,700, and the present allocation to the initial power development is one-fifth of 32.5 per cent of this sum. On the basis of the Commission's plan, 57 per cent of the total ultimate cost of the Bonneville project would be allocated to power. (Federal Power Commission, Release No. 380, February 9, 1938.)

[72]The dissension which has developed in the administration of the Tennessee Valley program illustrates the conflicts of interest and of points of view which are likely to appear. See *Removal of a Member of the Tennessee Valley Authority*, Message from the President of the United States, Sen. Doc. 155, 75th Cong., 3d sess., 1938.

[73]"Mutual company," used here in its usual meaning when applied to a business undertaking, refers to that type of organization which is fundamentally a consumers' cooperative association, the owners of the enterprise being the same individuals who use the product or service.

even include them in census data.[74] In some cases they may have been a source of annoyance to and of competition with public utility exchanges, chiefly because in most states they are not subject to regulation. It is customary to require mutual associations to get a certificate of convenience and necessity before beginning operation; beyond that, they usually are not controlled. But in at least two cases, one of them a state supreme court decision, mutual telephone companies have been interpreted as public utilities and subjected to all public utility laws.[75] The Pennsylvania commission has refused to accept that interpretation, however, in deciding that a mutual company is not properly considered a public utility deserving of protection from competition, because such a company can withdraw from business on ninety days' notice and serves stockholders only.[76] The Wisconsin commission put an opposite interpretation on a similar situation, deciding that a mutual company requiring purchase of stock but which had never refused to extend service was entitled to protection.[77]

Perhaps no more competitive influence should be accorded mutual telephone associations than that the possibility of their organization exerts a restraining effect on privately operated companies in small communities where mutual undertakings are easily established or where they already are operating. For the most part, they exist because the large systems have not chosen to extend service to outlying areas. Consequently they cannot be cited as significant evidence of competition in the telephone business.

This type of organization has also existed for some time in the field of electric service, particularly on the Pacific coast and in the north central states in areas not served by private companies.[78] Groups of large industries in the Pacific states have sometimes formed mutual associations to generate power in centrally located steam plants burning natural gas. The spread of this type of power-producing unit as a result of the California natural gas conservation law of 1929 has caused the private companies some concern. Such mutual electric companies are beyond regulatory authority in California.[79] In the main, however, electric service in the past has been controlled predominantly by private power systems in rural as well as in urban areas.

Under the sponsorship of the private utilities, electric service to rural

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[74] Bureau of the Census, *Census of Electrical Industries: Telephones, 1932.*

[75] *Mountain States T. & T. Company* v. *Project Mutual T. & T. Company* (Idaho) P.U.R. 1916F, 370; *Ashley Tri-County Mutual Telephone Company* v. *New Ashley Telephone Company* (Ohio Sup. Ct.) P.U.R. 1916B, 401, 110 N.E. 959.

[76] *Re Farmers' Mutual Telephone Company* (Pa.) P.U.R. 1917C, 171.

[77] *Re Cochems* (Wis.) P.U.R. 1916B, 841.

[78] Adams, W. C., "Rural Electric Cooperatives Expanding Rapidly under R. E. A.," *Public Utilities Fortnightly*, Vol. 19 (1937), p. 161.

[79] *Electrical World*, Vol. 95 (1930), p. 1163.

residents and farm operators has not developed rapidly. Line costs and rates have been high, guarantees have commonly been required, and the prevailing attitude has been that rural areas are not profitable to cultivate except on a selective basis.[80] Recently, the federal program to electrify rural America has brought the cooperative association into prominence. The activities of the Rural Electrification Authority, tentatively established by executive order in May, 1935 and given permanent status by Congress in May, 1936, have given strong impetus to rural electrification through cooperative associations.[81] This federal agency is devoted to the policy of increasing the use of electricity on the farm by lowering line costs, cheapening appliances, liberalizing rates, and offering financial aid to those who desire service. Indicative of the potentialities is the more than 50% increase in the number of farm customers in the United States from December 31, 1934, to June 30, 1937.[82] It is worth notice that this awakening of interest in rural electrification has not been confined to the United States; in fact, other nations report earlier attention to the problem and more rapid progress than in the United States.[83]

The question for consideration here is whether the rural cooperative undertaking, bolstered by federal and state direction and encouraged by financial aid, is properly described as a competitor of the private utility. That there will be some competition seems altogether probable; but it does not follow that the program is predominately or necessarily competitive. In the first place, it must be taken into account that the private companies, with some exceptions, did not push rural electric service vigorously until the cooperative program began to take form. In many cases also, the private companies had developed rural lines on a "string-line" basis, had tapped only the most profitable regions, and generally had followed a policy of "skimming the cream." The cooperative associations established to date are intended to serve customers previously ignored by private companies and to develop compact areas in a thorough manner. Moreover, many of the mutual organizations purchase current from existing private companies, in which case the two agencies are complementary rather than competitive. It is a favorable sign that some of the private companies have manifested a friendly attitude toward cooperative associations.[84] In other cases, however, the private companies have acted to impede the program by refusal to cooperate, by legal

[80] Federal Power Commission, *Electric Rate Survey, Rural Electric Service*, Rate Series No. 8, 1936.

[81] The *Rural Electrification News*, June, 1936, contains the Rural Electrification Act.

[82] Of 6,792,462 farms in the United States, 1,138,335, or 16.8%, were served with central station electricity on June 30, 1937, compared with 743,954, or 10.9%, on December 31, 1934. *Rural Electrification News*, Nov., 1937, p. 24. Over 225,000 rural families (150,000 farm families) received electric service for the first time in 1937. *Rural Electrification News*, Jan., 1938, p. 3.

[83] *Rural Electrification News*, Oct., 1936, p. 15.

[84] Adams, W. C., *op. cit.*, p. 168.

action, or by competitive construction.[85] How much of competition develops will depend, it seems, on whether the private companies choose to cooperate with the mutual associations by furnishing them with current at reasonable terms. By this sort of arrangement, since they have no investment in distribution equipment, the private companies assume little risk; and their traditional timid attitude in regard to the expansion of rural service loses whatever justification it may have had. The success of the program will depend on whether the cost of service and appliances can be brought within the range of the farmers' ability to buy.[86]

Competition of the Isolated Private Electric Plant

The competition of the isolated private electric plant with the central electric station has occasioned no small amount of difficulty in the regulation of electric rates. Probably the greatest bone of contention in the process of rate making for electric service, aside from determination of the "fair value" of public utility property, has been the insistence by the operators of central stations that it is necessary and sound business practice to offer low rates to large users who have the alternative of supplying themselves. In the present connection, it is not intended to study the subject of rate making as it touches isolated plant competition. That is reserved for consideration in a subsequent chapter.[87] The aim at this point is to ascertain whether or not there is a competitive situation and to indicate the probable trend of isolated plant operation and competition.

The problem resolves itself into a determination of the comparative economy and efficiency of the private plant and the central electric station. It should be noted that rates in effect are not conclusive as to relative economy unless they reflect cost and efficiency factors accurately. In treating that question, the only absolutely conclusive procedure would be to investigate specific situations. While that has not been possible, because of the inaccessibility of information, a comprehensive picture of the situation may have a value of its own.

As might be expected, there are points in favor of both methods of producing electric power for industrial use. The central station manager is inclined to emphasize the vigor of isolated-plant competition when vindicating his rate policies, but at the same time to contend that isolated-plant generation is uneconomical. The implication is that the central station's problem is not entirely that of reducing rates to induce the aband-

[85] Cooke, M. L., "Plan or Muddle Through," *Rural Electrification News*, May, 1936, p. 15. It is cited that private power companies in eleven states have persistently refused to quote reasonable wholesale rates to REA projects. In nineteen other states the private companies have cooperated by filing special wholesale rates for rural cooperatives. *Rural Electrification News*, Dec. 1937, p. 13.

[86] Further reference to the prospects for rural electrification will be made in the following chapter.

[87] Chap. VIII.

onment of isolated plants, but partly that of convincing the industrial manager that the central station is the cheaper source of power. This is a significant point, for more real salesmanship and careful cost analysis and less rate shading on a bargaining basis might bring the same results, and the former would be more apt to accord with the public interest in an equitable rate structure.

The chief advantage of the central station is the economy and efficiency attendant upon an increase in size and volume. The isolated plant lacks the opportunity for expansion beyond the needs of the factory which it supplies. Intensity of use is limited in the same way, which operates to keep load factor and diversity factor low in most cases. The advantages of the central station as to size and hours of use are not, however, as decisive as they may at first glance appear. The integration of industry into large producing units makes it possible for a factory to install equipment of improved type and to hire engineers of high class. In favor of the isolated plant also are the recent improvements in the efficiency of small generating equipment, which have been called "amazing" by one electrical trade journal.[88] It is anticipated by some engineers that upon the expiration of many long-term contracts between central stations and industrial enterprises, many of the latter will take advantage of the recent technical improvements in relatively small-scale generating equipment and once more install their own facilities. It may be, however, that such statements are partly intended to serve a strategic purpose in rate bargaining or in sales promotion of electrical equipment. But it should not be overlooked that an isolated plant saves the cost of transmitting and distributing electricity, always an important item for the central station, and one which increases with distance from the generating source. Thus, the farther the central station is removed from the factory in any given instance, the stronger becomes the argument for isolated generation. Perhaps offsetting this is the fact that an isolated station may be put to considerable expense in the hauling and handling of coal or other fuel.

The central station encounters stiffest opposition in those industries which themselves have a high daily and annual load factor. The steel industry is an outstanding example. Even more unfavorable to the electric utility is the situation where a private plant can use exhaust steam from its private electric plant for heating. A central station cannot usually realize this by-product economy because of the large condensation losses when steam is sent more than a very short distance. Utility companies have been known to try to meet this circumstance by buying up isolated plants, offering unduly low heating rates, established by indi-

[88] *Electrical World*, Vol. 95 (1930), p. 637.

PROPORTION OF ELECTRIFICATION OF FACTORY POWER EQUIPMENT*

	Horsepower (thousands)				
	1914	1923	1925	1927	1929
Combined capacity of prime movers and electric motors using purchased current	22,291	33,094	35,773	38,826	42,931
Electric motors operated by prime movers owned by factories	4,939	8,822	10,255	11,220	12,376
Estimated capacity of prime movers used to actuate these motors	3,550	6,350	7,380	8,070	8,910
Electric motors using purchased current	3,885	13,366	15,869	19,132	22,776
Total last two items	7,435	19,716	23,249	27,202	31,686
Percentage of total power equipment	33	60	65	70	74
Capacity of all prime movers in factories	18,406	19,729	19,904	19,693	20,155

*Bureau of Foreign and Domestic Commerce, *Commerce Yearbook: 1932*, Vol. I, pp. 222-223.

vidual bargaining, to the previous owners upon consideration that the utility be given the electrical business also. The isolated plants are operated during the heating season, but are allowed to stand idle during the remainder of the year.[89] This unutilized capacity is the source of considerable expense, a fact which merits careful attention by commissions when rates for this type of service are being inspected or approved. The public utilities also encounter special difficulty in meeting isolated plant competition in industries such as steel where blast furnace and coke-oven gases are available for use in proportion to the power needs.[90] The suggestion has been made that in such cases the central station and the isolated plant interconnect, the same gains being in view as when interconnection is made between two central stations.

Figures are available which shed light on the competition which central stations meet from isolated electric plants and from other types of prime mover. Data assembled by the Bureau of Foreign and Domestic Commerce reveal that about 74 per cent of all power used by factories is applied through electric current. In other words, only one-fourth of the total horsepower of prime movers in factories in 1929 was used to activate machinery without the intermediary of electric current. What is more pertinent to the present discussion, the capacity of all prime movers, electric and otherwise, has shown little increase since 1914. Practically all of the addition to factory power equipment has been in motors operated by central station current, the capacity of such motors having multiplied nearly six times in the period 1914-1929. The situation is summarized in the accompanying tabulation, showing that three-fourths of

[89] *Re Union Electric Light & Power Company* (Mo.) P.U.R. 1918E, 490, 523-530; *Re Pacific Gas & Electric Company* (Cal.) P.U.R. 1920E, 597.
[90] *Electrical World*, Vol. 95 (1930), p. 637.

all power used in factories in 1929 was electrical; and of this about 72 per cent was purchased from central plants, compared with a little over 50 per cent in 1914. A similar trend is found in the source of power used in mines and quarries.[91] Moreover, there has been no marked indication of a change in trend in the years since 1929. The number of large and small power customers of utility companies and sales to them decreased during the depression years, but by 1935 the pre-depression position of the electric utility companies had been recovered or surpassed. The number of large power customers, it is true, continued to decline moderately through 1935, but this may be due to a shift of some of them into the small power classification, which has shown an increase.[92] The indication is that the central stations have been highly successful in their campaign against the isolated plant.

There are notable exceptions. The iron and steel industry gets only about six per cent of its electric power from central stations. Other industries get about the following percentages of power from central utility plants: lumber, 30; paper, 40.1; woolens, 38.8; petroleum refining, 39; beet sugar, 11.8; and cane sugar, 2.6. The public utilities have been most successful in besting competition in the cotton goods, ice manufacturing, flour, clay products, chemical, preserving, boot and shoe, fertilizer, and slaughtering and meat packing industries. This difference in the extent to which the various industries are patrons of the central stations suggests a criticism of the attitude of the public utilities toward isolated plant operation. The utilities tend to look upon all power business as competitive. The presence of an isolated electric plant is considered a competitive challenge in any and all circumstances.[93] There has been, apparently, a failure to realize that some industrial power and heat business is beyond the ability of a central station to acquire on an economical basis. In some circumstances isolated plant generation will probably continue to be the cheaper method. No amount of bargaining can change the situation in that case, and the utilities would do well to realize it. The fact remains, however, that there has been a persistent general trend in favor of service from central stations for most operations.

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[91] *Ibid.*

[92] Bureau of Foreign and Domestic Commerce, *Statistical Abstract of United States—1936*, p. 353, Table 402.

[93] LeBoeuf, R. J., Jr., "When a Monopoly Is Not a Monopoly," *Public Utilities Fortnightly*, Vol. 6 (1930), p. 707.

CHAPTER VI

INDIRECT COMPETITION

Competition ordinarily refers to the rivalry between sellers of the same commodity or service, but the scope of the term is broader than that. In its more inclusive meaning, competition embraces not only rivals in the same business, but the struggle between producers of different commodities and services which satisfy the same or similar human wants. Thus cotton and wool may be said to compete with each other to some extent, and the same is true of electricity and gas, or ice and mechanical refrigeration. In other words, we are concerned here with what is known in economic terminology as the problem of composite supply. The significant point is that the markets for these commodities and services which cater to the same general demand are not entirely independent of each other, although the interrelationships may not always be obvious at first sight. On the other hand, the competitive market relationship between differentiated economic products may easily be exaggerated. There are market relationships between substitutes; but there are limits to those relationships as well.

The term competition is sometimes given an even more liberal interpretation, signified by the frequently encountered phrase "competition for the consumer's dollar."[1] A merchandising relationship is seen between "ships and shoes and sealing wax." Justice Holmes, formerly of the United States Supreme Court, has described it as the "competition of conflicting human desires."

Indirect competition, as the term is used here, has been widely heralded in recent years as a modern phenomenon that compels a restatement of all doctrine which concerns the action and consequences of competition. The emphasis on the "new competition" is reminiscent of the optimistic note sounded in the "new era" economics so frequently a few years ago, but which has suffered a serious set-back since the onset of the depression. Stress on the increasing importance of the conflict between alternative services and the struggle for the consumer's dollar has been no more noticeable anywhere than in the public utility industries.[2] A most

[1] Stickney, Albert, *State Control of Trade and Commerce*, p. 179. The work of Mr. Stickney, published in 1897, is testimony to the fact that the "competition for the consumer's dollar" is not a new concept. Cf. Zinder, H., "Competition and Merchandising," *N.E.L.A. Bulletin*, Vol. 17 (1930), p. 549.

[2] Cameron, M. K., "Rate Reduction as a Measure of Commission Efficiency," *Public Utilities Fortnightly*, Vol. 6 (1930), p. 259; Zinder, H., "Competition and Merchandising," *N.E.L.A. Bulletin*, Vol. 17 (1930), p. 549; Donovan, W. J., "Is the Interest of the Public Inconsistent with the Interest of the Utilities?" *Proceedings of the Academy of Political and Social Science*, Vol. 14 (1930), p. 167.

extreme expression of confidence in the efficacy of indirect competition to control monopolistic action is the following:

> We may look with equanimity, therefore, upon the further growth of the great super-power projects that will pool their combined electrical outputs as desired; vast groupings of railroad property and other transportation adjuncts; world-wide intercommunication services . . . . For above the vast organization of industry and service which may be brought into being to meet the expanding requirements of the nation, stands supplantive competition, a far greater industrial force and a more potent factor in our economic progress than the puny individual competition often worshipped as the 'life of trade.'[3]

Some consideration may rightfully be granted to the claim that indirect competition is becoming of greater moment. Technological advances have provided more ways of doing the same thing or a greater variety of things. The consumer at the present time is confronted with more ways of spending a somewhat larger income than were his immediate ancestors. Alternatives are insistently pressed to his attention by high-pressure salesmanship and by many modes of advertising. The lure of easy credits and installment buying also has made the decision of how to apportion one's income more difficult to reach.

But these observations made, it still remains true that the choice of what to buy is no new problem for a purchaser, whether he is a consumer of a public utility service or of something else. The assertion that the choice of *what* to buy is no different from that of *where* to buy a single product or service, and that the competitive restraint on price is the same in either case, invites investigation. When it is pronounced that over seventy-five per cent of the electric light and power business is highly competitive,[4] or that except for a "trivial amount" the local utilities are subject to "keen competition," a challenge is delivered which should not go unanswered.[5]

It is to be expected that the utility companies would be ardent supporters of a canon so favorable to their own interests. The acceptance of the view that utility services are rendered under highly competitive conditions would absolve the public service companies from supervision of their activities to the extent that their control is predicated on the prevailing belief that they sell under the protection of monopoly. The doctrine that the public utilities are operating now in competitive circumstances can be explained partly by the fact that, with the approaching

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[3]Sarnoff, David, "Science Will Destroy the Laggard," *Nation's Business*, Vol. 18 (1930), p. 32. The term "supplantive competition" evidently is used to describe what has been called indirect competition in this discussion.

[4]New York Report, 1930, pp. 324-326. A review of the testimony of Mr. Carlisle of the Niagara-Hudson Power Corporation before the Commission.

[5]Cabot, Philip, "Public Utility Rate Regulation," *Harvard Business Review*, Vol. 7 (1929), pp. 257, 264-265, 415. For brief criticisms of this theory see: Gray, H. M., "Competition as a Basis for Electric Light and Power Rates," *Journal of Land and Public Utility Economics*, Vol. 5 (1929), p. 242; Ryan, J. A., "Public Utility Rate Regulation," *Harvard Business Review*, Vol. 8 (1930), p. 193; and Boatwright, J. W., "Competition and Electric Rates," *Journal of Land and Public Utility Economics*, Vol. 7 (1931), p. 181.

exhaustion of their markets extensively, resort has been had to encouraging more intensive use by existing customers. As might be expected, such increased use meets less necessitous demands, as well as demands which are capable of satisfaction, to a greater or less degree, by other means. The realization that the latter uses have a diminished utility for consumers has been translated into the conclusion that virtually all utility business is now obtainable only on a competitive basis.

It is not to be supposed, either, that the adherents to the notion that public utility business is predominantly competitive are entirely within the industries. The idea has able defenders in academic circles, and it is undoubtedly significant that the doctrine of all-pervasive utility competition has developed concomitantly with the attack on present regulatory tactics.[6] The alleged failure of regulation seems to have aroused an inclination to sift the more or less discarded ashes of competitive theory, as applied to public utilities, and to salvage the remnants that can still be made useful in effectively controlling the public service companies. The reincarnation of rate theory based purely on what the traffic will bear and the assertion that such rate determination is in the public interest as well as that of the companies mark the extreme view that indirect competition by substitution is an adequate check on public utility monopoly and that legal control of return is therefore superfluous. The preliminary criticism is irresistible that the above-mentioned plan to eliminate present regulatory complications and deficiencies appears to be an attempt to provide a simple solution to a problem that refuses to be solved in so offhand a manner.

Beyond doubt, the discovery by the public utilities that there are limits to their powers to control the market has been desirable. Commercial development has commonly lagged behind the technological, organizational, and financial aspects of utility operation. The history of public utility development, more particularly in the early days, shows the public utility managers applied to the problem of gearing their productive capacity to meet a waiting market.[7] It is since 1920, and especially since 1925, that the public service corporations have awakened to the necessity for becoming merchandisers, if their markets are to expand in the future.[8] The industries had been drugged by the notion that they were "natural" monopolies. The energizing effect of the "new competition"

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[6] New York Report, 1910, pp. 374-375. The testimony of President A. T. Hadley before the Commission; Cabot, Philip, "Public Utility Rate Regulation," *Harvard Business Review*, Vol. 7 (1929), pp. 257, 413; Dorau, H. B., "Merchandising as a Factor in the Gas Industry," *Gas Age-Record*, Vol. 61 (1929), p. 863. "In and out of academic circles the monopolistic character of gas and other public service industries has been much overemphasized. It is high time some able analyst points out the really competitive character of these industries." The quotation is from the last reference cited.

[7] Sampsell, M. E., "Developing the Domestic Use of Electricity," *Transactions of the World Power Conference, 1930*, Vol. 1, Sec. 1, p. 236.

[8] Ainey, W. D. B., "Sidewalk Competition," *Nation's Business*, Vol. 7 (1919), p. 73.

on public utility merchandising policies is plainly noticeable. But as is so common when men suddenly become acquainted with a new idea, the tendency has been to lean too far in the opposite direction. Thus it is that now the prevailing attitude within the public utility industries is that their markets are keenly competitive markets. It is the purpose of this chapter and the following one to test the validity of this proposition.

Possibilities of Substitution in the Various Services

A review of the possible alternatives from which a potential consumer of a utility service may choose is an indispensable prerequisite to a decision as to the price-regulating power which can be accorded indirect competition. To this end, nine groupings have been made, including domestic service, rural service, commercial light and small power, municipal lighting, industrial power, railroad electrification, industrial heat, communications, and local transportation. In each of these divisions the purpose is to discuss briefly, the present situation and the probable future trend. The rivalry between alternative products and services includes not only the competition between the public utilities themselves, i. e., between gas and electricity, or between bus and street railway, but also the struggle for the market between a utility service such as gas and a non-utility product such as coal.

Even though complete and reliable data were available to support the judgment of the writer as to the scope of competition in each of the following fields, limits set by the magnitude of the problem would forbid their detailed presentation in this study. In every case, the purpose is to present a general but comprehensive view of the competitive situation. Statistical information, therefore, is decidedly limited; but the sources of all facts which indicate either the fundamental superiority of one or the equality of the several alternatives are carefully noted.

Domestic Service

For many years the electric and gas utilities considered their businesses to be essentially monopolistic, and this belief coincided with the passive policy of accepting what patronage came to them. Vigorous salesmanship, in other words, was not applied to the domestic branch of the service. The electrical utilities, after their initial skirmish with the gas industry, settled down in their own particular niche, that of lighting homes. The present-day designation of domestic patrons as "lighting customers" is a survival of that attitude. The gas companies, likewise, reserved to themselves a particular type of domestic business, that of cooking.

The past few years have witnessed a changed opinion with regard to

domestic service. With a closer approach to the saturation point in the development of markets extensively,[9] these two industries now have turned with considerable zeal to the intensive cultivation of the present users. In fact, both assert that the domestic business holds greater promise for future increase than does any other class.[10] The gas industry has been particularly concerned with the development of new domestic uses because of threatened loss in the cooking load, due to the trend toward construction of apartment dwellings with provision for electrical installations only and to the increase in restaurant eating and the buying of prepared foods.[11] The desirability of heavier domestic consumption is intensified by the resultant improvement not only of plant load factor, but more particularly of the density factor, or distribution load factor.[12] The domestic load per customer has shown steady increase over a period of years in the electrical industry, the annual use increasing from 268 kilowatt-hours in 1914, to 428 kilowatt-hours in 1926, to 477 kilowatt-hours in 1929, and to 669 kilowatt-hours in 1935.[13] But the growth has not been such as to indicate a wide usage in the home of the major gas and electric appliances at rates which can be borne by electric lighting and gas cooking. The necessity for offering low rates to induce increased use of the service has been the occasion for designating domestic business as competitive.

One of the most interesting and worthwhile studies of the market for domestic electric service uses the budget expenditures for light, fuel, and power by American families given by the Bureau of Labor Statistics. These expenditures are compared with what would have been paid for fuel, light, and power if all service had been rendered by 376 electric companies serving a population of 54,000,000. Had it been so, $2,236,000,000 would have been paid instead of the $1,298,000,000 actually ex-

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[9]The electric light and power industry now has approximately twenty-one million domestic customers, compared with twenty million in 1930 and sixteen and one-half million in 1926. Edison Electric Institute, *The Electric Light and Power Industry in the United States*, Statistical Bulletin No. 4, 1937, Table XLIV, p. 42.

[10]Swanson, J. K., "Domestic Uses of Gas Other than Cooking," *Proceedings of the American Gas Association*, 1929, p. 452; *Electrical World*, Vol. 93 (1929), p. 5, and Vol. 95 (1930), p. 1338.

[11]Tappan, W. H., "A Survey of Methods to Prevent Loss and Insure Gain of Domestic Cooking Load," *Proceedings of the American Gas Association*, 1929, p. 449.

[12]It is estimated that domestic lighting load factor is only from ten to fifteen per cent. State of New York, *Report of the St. Lawrence Power Development Commission*, 1931, p. 75.

The load factor of a plant or system of generating units is the ratio of the average service rendered to the maximum service supplied during a specified period of time. Thus, there can be a daily, monthly or annual load factor. It is apparent that load factor is a matter of concern not only to public utilities, but to other types of industry as well, since it measures the degree of stability in the use of productive facilities. It is of special importance to public utilities of the service type, such as electricity supply, because the demand is not constant, the service cannot be stored, and the fixed or constant costs are unusually heavy.

The density factor measures the intensity of use of service within a given area, for example, a city block or a square mile. It is, therefore, a measurement of economy in the use of distribution facilities. Since distribution cost is heavy in the case of the electric, gas, and telephone utilities, the density factor is of prime importance, although it does not seem to have received the attention it warrants. Cf. Watkins, G. P., *Electrical Rates*, pp. 29, 192, 165.

[13]National Electrical Light Association, *Statistical Supplement to the Electric Light and Power Industry in the United States, Revised to January 1, 1930*, p. 27; Edison Electric Institute, *The Electric Light and Power Industry in the U.S.*, Statistical Bulletin No. 4, 1937, Table XV, p. 17.

pended. Estimating that the 376 companies received in 1927 $270,000,000 from domestic service (half of the total for the entire industry), it is apparent that electricity is far from the goal of capturing the market for domestic power, heat, and light. The investigators conclude that 39 of the companies offer rates that are competitive in the market for all domestic uses of heat, light and power in the home, and that 105 out of the 376 are "in reaching distance of this market when allowing a preferential for electric service."[14]

Up to the present time, the electric and the gas utilities have not succeeded in capturing a very large portion of the potential domestic load. It has been estimated by the National Electric Light Association that whereas at the present time average domestic consumption is about 700 kilowatt-hours per year, there is a potential market for 2,150 kilowatt-hours for each domestic customer.[15] Accordingly, the market is about one-third saturated. Only four electric appliances are in wide-spread use and all of them are minor ones,[16] although progress is reported each year in extending other uses.[17] It is the expensive and large-use appliances which have been the most difficult to place in the homes. At the same time, these are the ones which are the profitable load builders. Nor is the difficulty of capturing the market for the water heater, space heater, air conditioner, refrigerator, laundry equipment, and cooking range explainable solely on the basis of cost of current. The initial investment in the requisite appliances weighs heavily. It would cost over $1,000 to equip completely a home with electric labor-saving devices and more than an additional hundred dollars to provide health and comfort appliances.[18]

German students of the consumption of public utility service have emphasized the importance of publicity and salesmanship as supplementary to attractive rates in building up the domestic load.[19] The opinion is that educating the people in the advantages of gas or electricity is needed primarily in the domestic branch of the service, while low rates are the main consideration in the case of large industrial consumers. When allowance is made for the limitations imposed by high initial appliance cost and the necessity for extensive publicity and salesmanship in marketing new uses for the service, it must be acknowledged that gas and electricity do encounter some competition from alternative sources

[14] LaCombe, C. F., "The Competitive Market for Domestic Electric Service," *Electrical World*, Vol. 89 (1927), p. 1139.

[15] *N. E. L. A. Bulletin*, Vol. 16 (1929), p. 508.

[16] Sampsell, M. E., "Developing the Domestic Use of Electricity," *Transactions of the World Power Conference, 1930*, Vol. 1, Sec. 1, p. 236. The appliances referred to are the flat iron, portable lamp, vacuum cleaner, and toaster.

[17] Edison Electric Institute, *The Electric Light and Power Industry in the United States*, Statistical Bulletin No. 4, 1937, p. 22.

[18] Sampsell, M. E., *loc. cit.*

[19] Adolph and others, "Der Belastungsfactor der Electrizitatswerke und seine Beeinflussung durch die verschiedenen Stromverbrauchen," *Transactions of the World Power Conference, 1930*, Volume 15, p. 38; Pirrung, A., and others, "Electrizitatstarife, neuere Bestrebungen und Erfahrungen," *Transactions of the World Power Conference, 1930*, Vol. 15, p. 107.

of fuel and power in the home. It is necessary to mention only a few such as coal, natural ice, oil, wood, and appliances operated by human energy. The most significant fact to be noted in connection with these substitutes is that in the vast majority of cases the public utility service is a more desirable one from the standpoint of convenience, ease of operation, cleanliness, accuracy of control, and saving of human time and energy.[20] The substitutes cannot, then, be compared merely on the basis of costs, and their competitive status determined thereby. The equating of both costs and satisfactions is involved. Gas and electricity occupy the top of the scale, both as to cost and as to quality of the service.

When substitutes, such as raw fuel, are readily available and are in common use at a lower cost than the utility company can meet with its superior service, it is doubtful whether the resultant competition is very effective as a limitation on rates. There is no intent to minimize the price-limiting power of indirect competition where it is effective, but the observation seems to be justified that much of what has been termed competition in public utility service, especially with respect to the domestic business, is such only in the sense that a Cadillac competes with a Ford in the automobile market. In other words, gas and electricity are so much superior in use to wood, coal, oil, and natural ice that the former must be termed luxuries relative to the latter when cost is given its due consideration in the buyer's decision. By and large, they appeal to different markets. True, there is competition at the borderlines, or at the margin of indifference. In some cases, the competition will be spirited, where the relative costs balanced against the relative qualities of the service strike an approximate equation, and where the consumers under consideration may be presumed to have the financial ability to choose the superior service. Water represents an extreme case. In urban communities especially there is no satisfactory substitute for pure water furnished from a central source.

Gas and electricity do seem to compete on fairly even terms for some uses. The cost and the quality of the service are similar enough in many energy applications to constitute real competition. But as will be noted in another connection,[21] one is scarcely justified in judging these two public utility industries as competitive when they are to a very great extent under one control. And even here, it is likely that past experience will be repeated, and competition will prove to be a temporary phenomenon, as was the case in lighting during the early years of the present century. When great technological advances are being made in various

[20] Bates, H. E., "The Economic Cycle of Gaseous Fuels," *Transactions of the World Power Conference, 1930*, Vol. 2, p. 321, 324; *Refrigeration Engineering*, February, 1927; Nutting, H. G. D., "The Electric Water Heater," *N. E. L. A. Bulletin*, Vol. 16 (1929), p. 641.

[21] Chap. VII.

fields, it may appear for a time that several processes, products, or services are competing on an equal basis. Very often, however, public preference, as well as the technical expert and accurate cost analysis soon turns the tide in favor of one or the other.

The competitive nature of domestic utility service has been exaggerated. The grossest evidence of this is the assertion that so great a portion of the services are rendered under competitive conditions, referring to the availability of substitute services, that rates may properly be established on a basis of what the traffic will bear. The leading proponent of this theory bases his conclusion on the judgment that the non-competitive areas in the rendering of domestic service are small.[22] The weight of the evidence is that the areas where competition by substitution is really effective are small.

In any event, there are few who will deny that domestic lighting is monopolistic in that there is no comparable substitute. If this be granted, then it is of little avail to point out that the coal furnace or oil heater competes with the gas furnace, or the electric refrigerator with the ice man, which, within the limits noted above, is granted. The statistics which show that the 20,000,000 domestic users of electric service in the United States make an average use of less than sixty kilowatt-hours of electricity per month prove conclusively that a majority of the consumers are limited in their use of electric service to lighting and to a few small-load appliances. It is very probable that a majority of all the domestic users of electricity do not use over 25 to 30 kilowatt-hours per month. Even though it might be assumed, then, that all other utility business is competitive, the case is not made for the abandonment of legal control over rates.

The small consumers, who have come to look upon a minimum amount of public utility service as a necessity, are a large majority of the total number of central station customers, and they have no bargaining power in the form of an adequate substitute.[23] These customers should not be forced to substitute an admittedly inferior service in order to appraise a public utility monopolist of the fact that there is a limit beyond which he cannot go in charging for his service. Competition by substitution contains little protective or regulative power if some of the uses are competitive and some are not. It is no small problem to rule accurately the exact limits of the competitive area; and that is the environment in which discrimination flourishes, and shades easily into unfairness.

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[22] Cabot, Philip, *op. cit.*, p. 414.

[23] New York Report, 1930, pp. 375-376. The minority report criticizes the Hadley doctrine of charging what the traffic will bear, on the ground that it grants no protection to the mass of small users of the service.

Rural Electric Service

The electrical industry (and to some extent the gas industry also)[24] has developed a lively interest in the 50,000,000 horse-power energy which is required to run the more than six-million farms of the United States.[25] A National Committee,[26] composed of twenty-four state organizations, the United States Departments of Agriculture, Commerce, and Interior, the National Electric Light Association, the American Farm Bureau Organization, the American Home Economics Association, and many other bodies, was organized in 1923 to investigate the possibilities of applying electricity extensively to the biggest business in the country.[27]

Rural electrification, nevertheless, is still in its infancy, taking the country as a whole. At the end of 1929, only 8.9 per cent of the farms in the United States were connected with electric light and power lines.[28] A few states have made notable progress; in eight states more than fifty per cent of all farms were receiving electric service on October 31, 1936. In twenty-two states, however, less than five per cent of all farms were electrified on the above date.[29] Despite the activities of the federal government through the Rural Electrification Authority, only 18 per cent of farms were receiving electric service at the end of 1937. The year 1937 was, however, a record one for rural electrification, fifty per cent more farms being electrified than in the year 1936. The number of new customers added to lines financed by R. E. A. was approximately ten times the number added in 1936.[30]

The potential use of electricity, and gas also where it is available, on farms is tremendous. A completely electrified farm would use 8,400 kilowatt-hours, according to the National Electric Light Association.[31] The Federal Power Commission reports that one-half of all farms receiving electric service consume less than thirty kilowatt-hours per month. Average annual consumption per farm customer for the United States, excluding California, was 957 kilowatt-hours in 1933.[32] Agriculture as an industry is far from being completely electrified. The present average rural consumption indicates that electrification has not proceeded beyond

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[24] Boonstra, Richard, "The Farm Goes Modern with Gas," *American Gas Association Monthly*, Vol. 11 (1929), p. 137.

[25] National Electric Light Association, *Statistical Supplement*, 1930, pp. 21-22.

[26] The Committee is known as the National Committee on the Relation of Electricty to Agriculture. *National Electric Light Association Bulletin*, Vol. 15 (1928), p. 144.

[27] The 1920 Census showed agriculture to be a $78,000,000,000 enterprise. Manufacturing was second with $46,000,000,000. Cf. Davis, P. O., "Shall We Electrify Agriculture?" *N. E. L. A. Bulletin*, Vol. 11 (1924), p. 603.

[28] National Electric Light Association, *Statistical Supplement*, 1930, p. 22.

[29] Edison Electric Institute, *The Electric Light and Power Industry in the U. S.*, Statistical Bulletin No. 4, 1937, Table XVIII, p. 19.

[30] *Rural Electrification News*, Vol. 3, No. 5, Jan., 1938, p. 3. See the discussion on pp. 94-96 concerning the extension of rural electrification in recent years under the sponsorship of the federal government.

[31] *N. E. L. A. Bulletin*, Vol. 16 (1929), p. 508.

[32] Federal Power Commission, *Electric Rate Survey, Rural Electric Service*, Rate Series No. 8, pp. v, 17.

the use of lighting and of minor appliances in the typical farm home. Notable exceptions can, of course, be cited.[33]

The availability of more than one hundred ways to use electricity and of at least twenty possible applications of gas on a model farm does not prove the competitive nature of rural electric or gas service.[34] The same considerations apply as in the case of urban domestic service, and even more forcibly. Installation costs are high. The cost of the appliances necessary to a complete electrification is prohibitive in the majority of cases.[35] The rate for the service itself must be relatively high, unless use is considerable, in order to cover the high transmission and distribution costs.[36] Indicative of the limited ability of farm operators to pay the costs of electrification is the fact that approximately one-third of all farm dwellings were valued at less than five hundred dollars in 1930.[37]

The use of electricity in many agricultural processes must be counted a luxury as long as agriculture is conducted on a small individual farm basis. On the basis of comparative costs, effective competion cannot be given a wide scope. Where gasoline engines are used on farms, government figures indicate that central station electricity can do the work as cheaply.[38] Central electric stations, moreover, have little to fear from the installation of private electric plants. The competition from the latter source has been greatly overestimated. Except in very thinly populated areas, public utility energy can be offered profitably at so much less cost that the possibility of installing a private plant operates as an upper limit to monopoly price rather than as a true competitive factor, since one horsepower-hour of electricity produced in a private electric plant installed on a farm costs approximately twenty-five cents.[39] Despite the surprisingly high cost of animal power used on farms, which has been estimated to be the equivalent of 15½¢ per kilowatt-hour, substitution of electric motive power for animal power on a wide scale is not a probable alternative, at least in the immediate future, in view of the cost of the equipment and the unfavorable load factor in its use due to the prevalence of individual farming on a small scale. It is likely that the major part of the

[33]Experiments on five farms under the direction of the University of Minnesota indicated the possibilities in the use of electricity in agricultural processes on model farms. Stuart, C. F., "The Cost of Electric Service to the Farmers," *N. E. L. A. Bulletin*, Vol. 16 (1929), p. 172. See also issues of the *Rural Electrification News* for outstanding but still exceptional cases of electrified farming.

[34]Boonstra, Richard, "The Farm Goes Modern with Gas," *American Gas Association Monthly*, Vol. 11 (1929), p. 137; Sampsell, M. E., "Developing the Domestic Use of Electricity," *Transactions of the World Power Conference, 1930*, Vol. 1, Sec. 1, pp. 236, 248.

[35]Jones, G. H., "Effect of Load Factor on the Cost of Production and Methods of Improving the Load Factor," *Transactions of the World Power Conference, 1930*, Vol. 15, pp. 3, 25.

[36]State of New York, *Report of the St. Lawrence Power Development Commission*, 1931, p. 92.

[37]Edison Electric Institute, Statistical Bulletin No. 4, 1937, p. 18.

[38]Data based on conditions in 1924 assembled by the U. S. Dept. of Agriculture in Bulletin No. 1348. Reprinted in the *N. E. L. A. Bulletin*, Vol. 16, (1929), p. 28.

[39]*Ibid.*

electric service to the agricultural population will continue to be in the home for some time to come.[40] It is doubtful whether, taking the country as a whole, the public utilities themselves expect to be able to compete for a large part of farm energy requirements.[41] Under present conditions of farm ownership and income of operators, it is difficult to see how electrification of farm operations on a large scale can be brought about without heavy subsidies. Under the circumstances farm electrification is more a process of limited technological displacement and gradual social change than a matter of competition.

Commercial Light, Heat, and Power

In the gas and electric industries, the commercial class of business refers to use in office buildings, large apartment buildings, hotels, stores, theatres, restaurants, bakeries, and public laundries. In the electrical business the distinction is sometimes made between small power, meaning the commercial class, and large power, referring primarily to industrial or manufacturing consumers.

The public utilities have not been disposed to consider this business as strictly competitive to the extent that the large industrial business is so regarded; nevertheless, there is emphasis upon the opposition which is met from alternatives. The gas industry is at the present time campaigning for a larger share of the restaurant, hotel, and public laundry heating load, partly with the idea of offsetting the loss which has been sustained in the domestic load as a result of the housewife having relieved herself of much of the drudgery formerly connected with her duties. Accordingly, the rivalry of coal and oil has been found to be a distinct barrier, and the difficulty of installing gas appliances in commercial business when the raw fuels are relatively inexpensive is cited as proof of the competitive nature of the business.[42] But at the same time the gas industry in its selling activities is wont to preach the inefficiency and inconvenience of the raw fuels as sources of energy in the individual establishment, and to predict their ultimate demise except as used by the central station. The tendency now is to regard electricity as the chief rival in these heat applications, but, as was pointed out before, such competition is no protection to the rate payer if the sister utilities are under one control.

In the field of commercial lighting and small power, the private installation in the form of a Diesel engine or Delco plant is considered the chief competitive threat. The oil engine manufacturers have made a

[40] Young, Owen D., "Making the Load Lighter by Electricity," *N. E. L. A. Bulletin*, Vol. 13 (1926), p. 27.

[41] "Over the country in general, electricity does not hope to supply a large part of the farm power requirements." Jones, G. H., "Effect of Load Factor on the Cost of Production and Methods of Improving the Load Factor," *Transactions of the World Power Conference, 1930*, Vol. 15, p. 3.

[42] Cabot, Philip, and Malott, Deane W., *Problems in Public Utility Management*, pp. 251, 260.

spirited effort to get this type of business.[43] The American Society of Mechanical Engineers is on record, however, with the judgment that small Diesel engines cannot compete with central station power except where public utility rates are unduly high. It has been said that "if a real deflation of public utility and holding company finances should ever take place and rates be brought in line with the true economic value of the service, it is unlikely that the use of Diesel engines for electric power generation would persist very long except in altogether special instances.[44] Lacking the load factor and diversity advantages of a centralized system, individual service must in most cases be a poor alternative. In other words, the presence of small individual installations is indicative not of a naturally competitive situation, but of the failure of monopolistic utilities to go after the business with an offer of reasonable rates.[45] That power produced by individual electric plants costs approximately twenty-five cents per horsepower-hour is proof enough that competition is meaningless when applied to such circumstances.[46] Furthermore, expressed opinion from informed sources that commercial business yields a higher margin of profit than any other class of electric business contradicts any contention that the service is rendered under highly competitive conditions.[47]

Municipal Lighting

An appraisement of the force of competition in municipal lighting is best made by considering how rates for this class of business are determined. Street lighting, it should be noted first of all, is a very choice type of business for the central station. The annual use of energy by a single 100-candlepower lamp is greater than the average annual consumption of a residence customer. There is a minimum of required investment, no meters, no credit risk usually, and negligible accounting expense. Moreover, municipal lighting has high load factor and is almost entirely off-peak, especially in large cities where the industrial power daytime load is heavy.[48]

Aside from the uninviting prospect of substituting gas for electricity, a municipality's alternative to purchasing energy from a central station is to provide its own lighting service. In some cases municipal plants have

[43] In 1928 over 440,000 horsepower in oil engines was sold. Eighteen per cent of this was installed for industrial power purposes, and was installed therefore in the face of electric power competition. Zinder, H., "Competition and Merchandising," *N. E. L. A. Bulletin*, Vol. 17 (1930), p. 549.

[44] Kuttner, J. (American Society of Mechanical Engineers), "Development of the Stationary Diesel Engine Under the Conditions of American Power Economics," *Transactions of the World Power Conference, 1930*, Vol. 8, Sec. 29, p. 171.

[45] Although the consensus is that the small Diesel engine is not the cheapest source of power, large installations are used to advantage as reserve capacity to meet peak loads of central stations. This use of the Diesel engine has made greater progress in Europe than in the United States, however.

[46] *N. E. L. A. Bulletin*, Vol. 16 (1929), p. 28.

[47] Nash, L. R., "Electric Tariffs in the United States and the Proper Relation between Industrial, Commercial, and Domestic Rates," *Transactions of the World Power Conference, 1930*, Vol. 15, pp. 87, 101.

[48] Blackwell, W. T., "Street Lighting: A Much Neglected Source of Revenue," *N. E. L. A. Bulletin*, Vol. 16 (1929), p. 213.

been established in the first instance in order to obtain municipal lighting service at reasonable cost. For most cities such a plant would be small and its load factor relatively poor unless it chose, and had the right, to compete with the private company for diversified classes of business. In the case of the larger cities, competitive bids might be invited from several private utility enterprises in the vicinity,[49] assuming that there were no community of interest among them. These rather unattractive and restricted alternatives demonstrate the limitations to the city's economic bargaining power in the making of a lighting contract. In practise, such contracts often are the product of much bickering, the municipality threatening to install its own plant, the public utility knowing that it can offer a rate as a last resort which will prevent such an occurrence. Once a contract has been made, competition is entirely out of the picture until the time for the making of a new contract draws near.

A city's greatest weapon in bargaining with an electrical utility is not strictly economic at all; it is political. The desire to retain the good will of the citizenry and taxpayers and to receive friendly treatment by municipal officials in tax and franchise matters is the most important restraining factor which influences public utility rate policy in regard to this type of business. It is public relations, more than competitive economics, which limits the rate stipulated in a street lighting agreement.

The most decisive answer to the presumption of competitive rate determination for municipal lighting contracts is gained by a glance at the average rates for such business. Despite the fact that the use of current by municipalities is frequently off-peak and that the average quantity used was 68,709 kilowatt-hours per year, both of which point to low cost, the average rate in 1936 was 3.9 cents per kilowatt-hour. This compares with the average use by large industrial power customers of 168,437 kilowatt-hours per year, at an average rate of 1.21 cents. For commercial users under the small light and power classification, average use per customer per year (1936) was 4,155 kilowatt-hours and the average revenue 3.71 cents per kilowatt-hour.[50] There can be little doubt what the opinion of the electrical industry is as to which of these types of business is gained under competitive conditions. A considerable divergence from cost is indicated in the case of municipal lighting.

Industrial Power

Popular opinion, including that of many who deny that most other classes of utility customers are served under competitive circumstances, would undoubtedly show an overwhelming belief in the strictly competi-

[49] LeBoeuf, R. J., Jr., "When a Monopoly Is Not a Monopoly," *Public Utilities Fortnightly*, Vol. 6 (1930), p. 707.
[50] Edison Electric Institute, Statistical Bulletin No. 4, 1937, pp. 2, 16.

tive nature of the large-scale industrial business. Many of the facts brought out in this section, which is devoted to a survey of industrial power, are equally applicable to industrial heating. In fact, some of the observations apply as well to the domestic, rural, and commercial branches of the service. Statements which have a general bearing, therefore, will not be repeated in the following section where industrial heat service is discussed, for the reader easily can select for himself the ideas that carry over to that field.

It is asserted by the public utilities that competition by substitution is today more keen than ever before in the market for industrial heat and power.[51] Nor is this impression confined to those interested in public utility operation, for many students of public utility affairs have accepted this view.[52] The regulatory commissions, too, as will be shown in Chapter VIII, have subscribed to the same hypothesis in their rate-supervising activities.[53]

The section on isolated plant competition, which was treated in the preceding chapter as a form of direct competition, brought out most of the essential points with regard to the struggle for the industrial power load. Since the isolated electric plant is easily the most formidable rival of the central station for this type of business,[54] brief mention of the other possible substitutes will suffice. Following is a general estimate of the combined competitive force of the isolated plant and the other alternative sources of power.

The central station has more than held its own in the battle with the isolated electric plant.[55] The government figures showing the relative proportions of power in industry provided by various means furnishes the further evidence that electric power, from whatever source derived, is making even more rapid progress in the competition between prime movers. Whereas in 1914, electrified equipment represented only thirty-three per cent of the total capacity of all prime movers in factories, in 1923 the percentage had increased to sixty and by 1929 to seventy-four.[56] In 1929 it was estimated that industry was seventy-eight per cent electrified for power purposes, including both central station and private plant energy.[57] The Pennsylvania Giant Power Survey Board in 1925 declared that electric power companies were supplying ninety per cent of all power

[51] *Electrical World*, Vol. 95 (1930), p. 637; LeBoeuf, R. J., Jr., "When a Monopoly Is Not a Monopoly," *Public Utilities Fortnightly*, Vol. 6 (1930), p. 707; Jones, W. A. (President, N. E. L. A.), "What Does the Future Hold?" *Electrical World*, Vol. 95 (1930), p. 1279.

[52] State of New York, *Report of the St. Lawrence Power Development Commission*, January 15, 1931, Report No. 3 on Marketing Aspects, pp. 63, 84; New York Report, 1930, p. 375.

[53] *Cf. Peck v. Indiana Light and Heat Company* (Ind.) P.U.R. 1916B, 445. For an expression by the 1929 rate committee of the National Association of Railroad and Utility Commissioners, see the *Public Utilities Fortnightly*, Vol. 5 (1930), p. 227.

[54] U. S. Department of Commerce, *Commerce Year Book, 1929*, Vol. 1, p. 292.

[55] Cf. Chap. V. The isolated electric plant was discussed in the preceding chapter since it is, according to our definition, a source of direct competition with central station service.

[56] Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce, *Commerce Year Book: 1932*, Vol. I, pp. 222-223.

[57] *Electrical World*, Vol. 94 (1929), p. 327.

used in the state, exclusive of that required by steam railroads, electric railways, and the steel and mining industries.[58]

Steam, which is the major competitor of electricity as a prime mover, has made no gain in recent years.[59] While the world's consumption of energy was about twenty-seven per cent greater in 1927 than it was in 1913, coal production increased only five per cent, positive indication not only that coal is meeting stern opposition from oil, gas, lignite, and water power, but that a decreasing amount is being used inefficiently as raw fuel, and a greater proportion as a basic fuel in the generation of electricity and the production of manufactured gas.[60] Agitation for the conservation of natural resources may have some bearing on this trend away from the use of coal, and perhaps of oil and gas too in time, as a raw fuel.[61] Figures published by the United States Bureau of Mines, however, are witness to the fact that public utility service has by no means completely conquered the industrial market for energy, for 24.9 per cent of all bituminous coal used in the United States is supplied to manufacturing industries,[62] whereas the electric light and power companies take 7.7 per cent and the manufactured gas industry disposes of only one per cent of the total.[63]

Hence, while over a long period of time the continued success of central station electrictity in supplanting other forms of power for industrial purposes seems a reasonable prophecy, the victory will not be an easy one. It must not be overlooked that improved and cheaper methods of utilizing other forms of power are being applied. Such improvements as automatic stoking and automatic control come to mind. It is to be noted, too, that the relative decline in the use of coal as compared with other forms of energy, cited in a preceding paragraph, is to be explained partially as a result of increased efficiency in its utilization as a raw fuel or direct source of energy. The public utility companies are by no means oblivious to the refinements being made in oil engine construction, especially in the case of large installations. In the single year 1928, 440,000

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[58] State of Pennsylvania, *Giant Power Report of the Giant Power Survey Board to the General Assembly*, February, 1925, p. 57.

[59] Derry, H. W., "Getting Your Share of the Power Load," *N. E. L. A. Bulletin*, Vol. 15 (1928), p. 718.

[60] U. S. Dept. of Commerce, *Commerce Year Book, 1929*, Vol. 1, p. 286. The pounds of coal necessary to the generation of a kwhr. of electricity has constantly decreased in the present century as follows: 1902, 6.7 lb; 1907, 5.4 lb; 1912, 4.4 lb; 1917, 3.3 lb; 1927, 1.79 lb; and 1929, 1.67 lb. The latter figures, being averages, are considerably above the performance of the best plants. One station near Cincinnati has established a record of .86 lb. of coal per kwhr. generated. N. E. L. A., *Statistical Supplement*, 1930, p. 11.

[61] Dickerman, J. C., "Bituminous Coal—A Raw Fuel or a Chemical Resource," *Annals of the American Academy of Political and Social Science*, Vol. 118 (1925), p. 122.

[62] The above statement might be misleading were attention not called to the fact that all coal consumed by manufacturing companies is not used for power purposes. Also, when coal is used as a source of power by industrial companies, it is not with as great efficiency as most central stations achieve.

[63] N. E. L. A., *Statistical Supplement*, 1930. Data supplied by the United States Bureau of Mines for an average year. It is appropriate to note in this connection that oil and natural gas have been rather minor factors in the fuel requirements of the utilities. In 1929, they constituted only fifteen per cent of the total fuel consumption of all electric light and power companies.

horsepower of oil engines was sold in the United States. The fact that on January 1, 1927, there was only 1,175,000 horsepower in such equipment in the entire country is proof enough that this type of power equipment is by no means obsolete.[64] The increasing efficiency of small-scale generating equipment has already been mentioned as a competitive factor which favors the isolated private plant.[65] Central stations must face the fact that they may not be able to dominate the market for industrial power unless they are willing to pass on to the users the economies of centralized generation.

In those sections of the country where some form of raw fuel is abundant, and therefore cheap, the supremacy of electricity is particularly difficult to establish. A recent example is the development of cheap natural gas in various parts of the country. Where private industry owns water power sites, as in New York state where manufacturing enterprises control a large part of the available hydro resources, it may be difficult for the central station to compete. A similar situation exists when power generation may be combined with industrial process in a factory, resulting in by-product economies which reduce the cost of electricity to a very low figure. The iron and steel and textile industries are typical.[66]

Consideration of the above deterrents to complete electrification calls attention to a misconception which is encountered frequently in statements by representatives of the industry as to what constitutes competition. An example is cited from the textile industry where electricity is generated from by-product steam through bleeder turbines at a cost "far below the price the average utility could generate it even in the most efficient plant."[67] There is no justification for calling that "competition," in the sense that the latter is reckoned as a price-limiting force. Thus, the view that all power business is within the potential market for central station service leads to confusion as to what the term competition encompasses.

The error is exemplified, again, when a "competition of rival processes" is conceived where the making of ammonia from coal has become so cheap that the cost of production by electrolytic process would be greater even though the electricity were given free of any charge to the manufacturer by the public utility. Doubtless, in many cases invention or improvement of an alternative productive process does create a bitterly competitive market. But, on the other hand, when some rival process has proved beyond the shadow of a doubt its superiority over central

[64] Zinder, H., "Competition and Merchandising," *N. E. L. A. Bulletin*, Vol. 17 (1930), p. 542.
[65] *Supra*, Chap. V.
[66] *Supra*, Chap. V.
[67] LeBoeuf, R. J., Jr., "When a Monopoly Is Not a Monopoly," *Public Utilities Fortnightly*, Vol. 6 (1930), p. 707.

station service, there exists, not an example of competition, but of its elimination. This point is especially pertinent in view of the alleged practice of utility companies in granting unduly low rates to large users of service, possibly at the expense of the rest of the patrons. It must be realized that in some circumstances the central station simply cannot compete, but must give way to a source of energy which is either definitely cheaper or superior in terms of the quality of the result. When that is the case, the situation is not properly described as competitive.

The public utility meets an additional obstacle, which lends plausibility to the belief in the fierceness of competition in the industrial field, in the unwillingness of potential consumers to scrap useful, though perhaps inferior, equipment. Lower rates must sometimes be offered to induce such scrapping of equipment than would be necessary were it not for the fact that energy service is rendered in connection with expensive and highly specialized instruments that require virtually a reorganization of the factory when extensive changes in power sources are made. It is apparent that in such circumstances the public utility trying to effect the substitution bears the burden of proof, and is distinctly in a buyer's market. This difficulty in monopolizing the field, due to the impossibility of easy transition from one source of supply to another, is undoubtedly a contributing factor to the general impression that competition is rife. It is to be noted, too, that this association of heavy initial expense attendant upon the installation of utility service, and the concomitant discarding of other valuable equipment, is not identified solely with the large power class of business, but is characteristic of all the others as well, including the domestic class of service.

Rather than an aggravation of the competitive situation, however, the above factor is properly considered a restriction on the free movement from one type of service to another with changes in price or rate. And it must be remembered, too, that whereas now the public utility may experience the restraining influence of expensive investment in its campaign to introduce wide-spread use of central station service, even when rates alone may be such as to indicate the economy of such a procedure, the circumstances are the same in the other direction, so that the transition once made, the public utility has gained a monopoly advantage in the same manner, by virtue of the disinclination of the consumer to discard expensive and specialized equipment.[68]

Some time ago a dissenter from the notion that the industrial class of electric utility business is competitive, presented the theory that the demand for industrial power is relatively inelastic, and that it is the de-

[68] This factor in the public utility's monopoly power will be discussed in the following chapter, where the dangers of over-promotion are the subject of criticism.

mand for domestic service that is highly elastic.[69] This is too sharp a distinction. The demand for *some* domestic uses is elastic, and it is conceded that the potentialities for further growth are probably greatest in the domestic field. But there are many uses for which there are no good substitutes, and domestic demand tends to become permanent once it has been incited. Were the thesis under discussion sound, it might be expected that domestic business users would be given uniformly low rates based on increment costs and large industrial users burdened with the fixed charges. If the latter were done, the statement is ventured that domestic rates would not be four or five times as great as large-scale power rates.

The proposition that the demand for power is inelastic is based on the fact that for the majority of industries the cost of power is a comparatively insignificant part of the total cost of the production process, which is a valid statement. Hence, a change in the cost of power can be expected to make little difference in the scale of production, and it follows that the demand for power will be unaffected. In this sense, it is proper to say that the demand for industrial electric energy is inelastic except for the relatively few industries, witness the electro-chemical factories, which would be attracted by low power costs.[70] Power costs would have to rise sharply before most industries would revert to other types of prime mover or cease to use power by going out of business.

But the demand for power is highly inelastic in this sense only. The conclusion that the demand for *central station power* is inelastic does not follow unless it be true that public utility service has so far outdistanced all competition on both cost and service bases that no reasonable possibility of thwarting rate increases by the substitution of some other source of energy remains. The above is an exaggerated statement of the prevailing situation with respect to the large power business, although it is true that electricity supplied by central stations is gaining the field and that the advance is likely to continue. But if the facts have been correctly interpreted in the preceding pages, the decision is that substitutes for central station large-scale power are more effective competitive factors than is the case when comparison is made between central station service and alternatives in, for example, many forms of domestic service, municipal lighting, and even commercial light and power. Therefore, although it be granted that a central station selling at cost from

[69] "The demand for electricity in the home is highly elastic. Here is the major competitive field of the industry. Rates for power, on the other hand, are relatively inelastic. If rates for electric energy make electricity the cheaper or preferable form of power, and rates were raised so that electricity ceased to be preferable, or it would pay to install a private steam generating plant, then the possibility of using substitutes would prevent a further rise in rates. But if the future policy of the companies is to be reduction and not rise in rates, it does not appear how rate reductions can lead to cost reductions unless they lead to an increase in sales of power." Peck, H. W., "An Inductive Study of Publicly Owned and Operated versus Privately Owned But Regulated Electric Utilities," *American Economic Review Supplement*, Vol. 19 (1929), pp. 197, 216-218.

[70] *Supra*, Chap. V.

an efficient plant can meet all competition, except where special advantages exist, the margin of superiority in many cases is not great. The substitutive power becomes effective within fairly close limits of price range.[71] The bargaining between seller and buyer is more equal, and the competition, therefore, is more keen in this class of service than in the others which have been analyzed.

In the broader sense, the industrial load is sufficiently elastic, through substitution, to serve as a fair measure of protection to large users. In the absence of regulation, it is not likely that large power consumers could be exploited to any great extent, although discrimination would, no doubt, abound. To hold otherwise would be to credit the heads of manufacturing companies with greater skill in bargaining than is possessed by public utility managers, for it is scarcely tenable that regulatory commissions have bestirred themselves much to protect the large users of service. Nevertheless, these industrial users have obtained low rates which are difficult to explain on any basis other than the bargaining power derived from, perhaps not equivalent but fairly comparable, alternatives.

Railroad Electrification

Circumstances governing railroad electrification and the supply of current by central stations to such railroad electrifications and to street railways are so similar to the above, no additional important principles bearing on the question of competition being involved, that only brief discussion of this class of business is required. The electric light and power industry has gained most of the electric railway business. In 1902, 39 per cent of all street railway companies had no private power plant. The proportion increased to 39 per cent for 1907, 49.3 per cent in 1912, 73 per cent in 1922, and 89.7 per cent for 1927. In the latter year, 68.3 per cent of all power consumed by street railways was supplied by central stations. Comparison of these two sets of percentages indicates that only the largest street railway companies consider it economical to generate their own electricity, since street railway power has a daily load factor of only about 35 per cent.[72]

Only one per cent of railroad mileage was reported electrified in the United States in 1935,[73] but its gradual extension is probable. The most important reason for predicting the partial displacement of the steam railroad locomotive is that the limit to the efficiency of the steam locomotive has been approached, yet there is insistent demand for power to

[71] Note again the limits to ease of substitution due to the fact of expensive investment.

[72] Bureau of the Census, U. S. Department of Commerce, *Electric Railways and Affiliated Motor Bus Lines: 1927*, p. 65.

[73] In 1935 there were 6,441 track-miles electrified on 29 steam railroads. Ten per cent of all passenger-car miles were handled over these lines. Federal Power Commission, *National Power Survey, The Use of Electric Power in Transportation*, Power Series No. 4, 1936, p. 7.

haul heavier loads more quickly. Smoke elimination is another major consideration. While electrification projects have usually not been undertaken solely with the purpose of reducing operating expenses, most of the electrifications in the United States have resulted in savings in this respect. The savings in coal are appreciable, for a locomotive requires about six and one-half pounds of coal to provide power the equivalent of a kilowatt-hour of electricity, whereas the average required to generate a kilowatt-hour of electricity in a central station is 1.67 pounds.

As in the case of industrial power, the great obstacle to more rapid electrification is the high cost of conversion from one system to another. The present unfavorable financial condition of railroad companies is another restraining factor.

Electrified motivation has a number of important advantages including cheaper maintenance, fuel and water savings, more continuous availability, greater track capacity, higher speeds, lower crew costs, heavier loads, and greater tractive efficiency. It is not implied, however, that railroad electrification is likely to supplant completely the steam locomotive in the near future. The feasibility of electrification depends above everything else on traffic density because of the great initial cost.[74]

There is no decisive rate-determining competition between steam and electricity for locomotive operation. Where electrification has taken place, competition for power service is between private generation and central plant power. Most of the electrifications in the United States use purchased central station energy and the trend continues in that direction, although a number of the largest projects in the country use privately generated power.[75] The electric light and power industry is anxious for the load, because it would tie in well with large interconnected power systems. A complete railroad electrification project is estimated to have a potential load factor of sixty-five per cent, combining passenger, freight, and switching. The affiliation with interconnected electric light and power utilities would obviate extensive and costly duplication of transmission networks. The competition between the two alternatives would be confined, in any event, to the time when the public utility and the railroad were bargaining for a contract. There could be no day-to-day or even year-to-year competition between the two sources of supply. Once committed to either source for power, transference to the other would be almost prohibitively costly.[76] It is extremely unlikely that a

[74] *Ibid.*, pp. 13-18.
[75] *Ibid.*, pp. 32-36.
[76] The material concerning steam railroads and steet railways has been taken from the following: Gibbs, George, "The Economics of Railway Electrification," *Transactions of the World Power Conference*, 1930, Vol. 11, p. 152; *Electrical World*, Vol. 94 (1929), p. 883; Jones, W. A., "What Does the Future Hold?" *Electrical World*, Vol. 95 (1930), p. 1277; Jones, G. H., "Effect of Load Factor on the Cost of Production and Methods of Improving the Load Factor," *Transactions of the World Power Conference, 1930*, Vol. 15, pp. 3, 26; *Pennsylvania Giant Power Report*, p. 57.

railroad once electrified would return to steam as a source of motive power. Recently, Diesel-powered engines have been put into use by a considerable number of railroads. Whether this will arrest the development of railroad electrification, time will tell. The issue will be decided in terms of cost and operating efficiency. At all events, they are not likely to be closely competitive. It is more to be expected that one will prove to be superior to the other, or that electrification may turn out to be more suitable in some circumstances and that Diesel locomotives will demonstrate superiority under other conditions. The Federal Power Commission in its report on this subject concludes that where a fair density of traffic exists or can be developed electrified trains will give better service at less cost.[77] It is suggested that the Diesel locomotive may be particularly suitable for terminal operations.

[77]Federal Power Commission, Power Series No. 4, pp. 56-57.

Chapter VII

INDIRECT COMPETITION (CONTINUED)

Industrial Heating

Most of the conclusions reached in the preceding chapter with respect to the status of competition in the supply of industrial power apply as well to the use of heat in industrial processes, and there is no need to repeat them. The present discussion will be confined to a statement of the conditions which are especially characteristic of the heating business.

The industrial heating load probably is considered the most competitive business for which the gas and electric utilities bid. To quote a representative of the gas industry: "Beneath us we have the crude fuels, battling on the price basis; above us we have electricity, crusading with the cry 'Quality regardless of price.' To the right is the produce man who shows our customers how to make their own, and to the left is the crew who go one better and deliver it to them in bottles."[1] The last reference is to propane and butane, derived as by-products in the refining of natural-gas gasoline. The influence of its competition with manufactured gas and electricity has been most apparent in California and other sections where natural gas and its derivatives abound.

The industrial heating business is considered highly competitive for several reasons. In heating processes both gas and electricity are seeking business strenuously, whereas in the power division gas does not assert itself very strongly. Both of these utilities are relatively new entrants in the realm of industrial heating; and in this field the raw fuels will no doubt make a stronger bid for continued recognition, despite the asserted wastefulness in their direct utilization.[2] The gas industry alone proposes to displace half of the bituminous coal now used in the industry,[3] and boasts of 20,000 possible uses for gas in industrial heating operations.[4] The electrical industry is a more recent solicitor of industrial heating business, but rapid progress has been made in recent years. In 1921, 13,000,000 kilowatt-hours of electricity were used for industrial heating purposes. In 1929, the figure was 83,000,000 kilowatt-hours.[5] In the last four years the industrial electric heating load has increased fifty per cent faster than

[1] Chapman, D. W., "What Is Our Position in the Competitive Fuel Field?" *Proceedings of the American Gas Association*, 1928, p. 798.
[2] Greenwood, Ernest, "The Battle of the Fuels," Chap. XI in *Prometheus, U. S. A.*
[3] American Gas Association, "Extension of Gas Service and Progress in Rate Making," *Transactions of the World Power Conference, 1930*, Vol. 2, pp. 467, 471.
[4] Swanson, J. K., "Domestic Uses of Gas Other than Cooking," *Proceedings of the American Gas Association*, 1929, p. 452.
[5] Ripley, C. M., *Facts About General Electric*, December, 1929.

the electric power load.[6] This has come about despite the fact that the thermal efficiency of electricity at the point of use is less than seven per cent of the original calorific value of the raw fuel from which the current is generated.[7]

Considered on the basis merely of fuel costs, the use of gas or electricity as an industrial heat agent is an economic paradox.[8] But it is a serious error, and a common one, to judge the competitive relationship of fuels on such a basis alone.[9] Determination of over-all costs of the heating operation involves the consideration of savings made possible by the superior advantages of gas and electricity—savings, through automatic temperature and atmosphere control, in fuel, labor, materials, and spoilage costs. Smaller floor space required, better and safer working conditions (which affect efficiency and turnover, insurance rates, and accidents), the flexibility of the heat application, and the possibility of intermittent heating have a legitimate place in the calculations of a factory manager.[10] In fact, the above is but one way of calling to mind that the fuel or energy cost has never been the only factor in the development of uses for gas and electric service. There have been advantages in added convenience, in cost reduction of other factors essential to the operations, or in superior technical results which must not be ignored. Thus it is that the slogan of gas and electric utilities with respect to industrial heating business has become: "Not what it costs to buy it, but what it costs to use it."[11] The manufacturer, in effect, buys results obtained through the application of heat, and the comparison of fuels requires the determination of what gas and electricity offer beyond the mere thermal function.

The result of the battle between the fuels is dependent upon the comparative results of lower fuel cost with disadvantageous utilization and higher fuel cost with advantageous utilization. In some cases, particularly in special treatments where perfection and uniformity of results are paramount, economy will specify the use of gas or electricity, the latter being an even more refined application of heat than the former. At one extreme are the heat applications where electricity only can accomplish the desired result.[12] Competition is no factor in this upper range. At the

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[6] *Electrical World*, Vol. 95 (1930), p. 157.

[7] Booth, W. N., "Gas and Its Various Competitors in the Future," *American Gas Engineering Journal*, Vol. 108 (1918), p. 123.

[8] On the basis of calorific value of the fuels and electricity, figuring coal (12,500 B.T.U. per lb.) at $10; oil (130,000 B.T.U. per gallon) at 6¢; electricity (3412 B.T.U. per kwhr.) at 1¢ per kwhr; and gas (525 B.T.U.) at $1. per M., the comparative costs per 1,000,000 B.T.U. are: coal $.40; oil $.452; gas $1.90; electricity $2.93. Leinroth, J. P., "Relative Utilization Efficiencies of Gas and Competitive Fuels and Electricity," *Proceedings of the American Gas Association*, 1927, pp. 911, 912.

[9] Doyle, J. A., "Economics of Industrial Heating Practice," *Gas Age-Record*, Vol. 64, (1929), p. 763.

[10] Ricker, B. M., "Industrial Electric Heat," *N. E. L. A. Bulletin*, Vol. 16 (1929), p. 287; Scott, W. S., "Is Electric Heat Economical?" *Electrical World*, Vol. 96 (1930), p. 213.

[11] Thompson, W. D., "Bucking Competition," *American Gas Journal*, Vol. 118 (1923), p. 267.

[12] Stansel, N. R., "Factors Affecting the Economics of Industrial Electric Heating," *Transactions of the World Power Conference, 1930*, Vol. 1, Sec. 2, pp. 429, 431; Jones, W. A., "What Does the Future Hold?" *Electrical World*, Vol. 95 (1930), p. 1279.

opposite extreme, where crude heat is required and quality is a relatively minor matter, neither gas nor electricity can compete on an equal footing.[13] The latter are not now, and may never be, a panacea to be used wherever heat is required. Between these extremes are those processes where choice of fuel turns on the careful consideration of all factors—fuel cost, over-all cost, and quality of the result. When an approximate equality between two or more alternatives is indicated, then only is there competition that is effective in price or rate control.

The general designation of industrial heating as competitive business is a misnomer. A differentiation of economic function, of considerable though not completely determinate extent except with reference to a specific situation, between the various fuels is noticeable. The classification of proper uses between gas and electricity, especially, cannot be made categorical, for they have much in common, thermally speaking.[14] But is doubtless true, even in the case of these two public utility services, and still more so when comparisons are being made between the utility services and the crude fuels, that an apparent competitive situation is largely the consequence of undetermined relative efficiencies for the job in hand and of opportunistic rate practices. Not a great deal of technical study has been devoted to this subject.[15] The opinion is ventured that when accurate cost data are made available, one form of energy will have been proved superior in many particular heat applications which now seem to be the arena for active competition.[16]

Communications

It has been claimed that the communication business, also, is distinctly competitive. The following statement is representative: "No one can deny that the telephone business is competitive; in fact, in this field government rate regulation has all but disappeared. In the telephone business it looks upon the surface as if competition entered only slightly, but here we have a national monopoly of such scope that the temptation to use monopoly power to limit production, which is the only way in which monopoly power can be abused, has disappeared."[17]

As a matter of fact, the argument for control of public utility rates

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[13] *Ibid.*

[14] Composite operation of these two utilities, which is very common, invalidates any assertion of price determination by competition between gas and electricity in this field of use, as well as in the others previously cited. This matter will be discussed in the latter part of this chapter. Cf. *Electrical World*, Vol. 95 (1930), p. 841.

[15] The American Gas Association maintains a committee whose task it is to study the competitive fuel situation. The published proceedings do not contain much conclusive information, however, and upon appeal to the Association directly, the writer was informed that "the Association has not available very much statistical information on competitive fuels which can be readily supplied to you." Cf. *Proceedings of the American Gas Association*, 1927, p. 775; 1929, p. 738.

[16] Cf. Russell, Herman, "Teamwork Needed," *Public Utilities Fortnightly*, Vol. 20 (1937), p. 387.

[17] Cabot, Philip, "Public Utility Rate Regulation," *Harvard Business Review*, Vol. 7 (1929), p. 265.

through the limiting force of indirect competition, or substitution, is particularly weak when it is tested with reference to the transmission of intelligence. The review of this public utility service will be brief, since few observations are made which have not been mentioned in the previous pages with reference to some of the other public service industries.

By means of patents, license agreements, control of the manufacture and sale of telephone equipment, domination of channels for capital, acquisition of common stock by the holding company device, and absorption of independent companies, a nation-wide monopoly, which now includes 80 to 90 per cent of the telephone business of the country, has been developed.[18] The two telegraph companies, the Western Union and the Postal Telegraph, both operate extensively over the country, yet it has been doubted that these two great companies actively compete in rates.[19] It is much more unlikely that the telegraph companies operate as a close check on the rates applied to the more than 20,000,000 telephones in the United States.[20] That the telephone and the telegraph compete for much of the long-distance toll business sounds plausible, the more in view of the policy of the American Telephone and Telegraph Company in cutting toll rates at frequent intervals in the past few years.[21] It must be remembered, however, that the telephone finds its most essential use to the masses of the people for purely local communication.[22] It has been estimated that ninety-eight per cent of all telephone business in the country is still intra-state communication.[23]

To be sure, air mail, regular mail, messenger, and personal communication are a few of the other possible alternatives for communication service, but that they are not equivalent substitutes for rapid and easy telephone communication need scarcely be stated. If it be argued further that telephone companies are subject to the competition for the consumer's dollar, the answer is that such competition is not very competent when the product or service in question has become a decided convenience to large numbers of people. Such is the case with the telephone.

Competition in interstate commerce in the public utility industries and competition in international business are not within the scope of this

[18] Federal Communications Commission, *Proposed Report Telephone Investigation*, 1938.

[19] Ryan, J. A., "Public Utility Rate Regulation," *Harvard Business Review*, Vol. 8 (1930, pp. 193, 198.

[20] Koukol, C. J., "World's Telephone Statistics, January 1, 1929," *Bell Telephone Quarterly*, Vol. 9 (1930), p. 212.

[21] *Bell Telephone Quarterly*, Vol. 9 (1930), p. 69.

[22] "These companies should not, however, overlook the fact that the basic, primary, and essential necessary service for which there is no substitute, is a local exchange and reasonable nearby toll service of a good standard; and that such service should be made available to those to whom it has become a necessity at rates not made unjustly or unreasonably high in an effort to maintain supremacy in the field of telephone communication, to carry to perfection the art of telephony, to maintain nation-wide, and indeed continent-wide, wire communication by telephone, or to experiment in the fields of wireless telephony." *Re Chesapeake and Potomac Telephone Company* (Va.) P.U.R. 1926E, 490.

[23] Ulm, A. H., "The Welding of the Wires and the Ether Waves," *Public Utilities Fortnightly*, Vol. 5 (1930), p. 406.

study. But the international aspects of communication of intelligence have become of such great importance recently that brief comment is justified. Moreover, in the field of communications, competition has evidenced itself in this country to a much greater extent in international commerce than in local business. Federal law specifically prohibits any attempt to monopolize the various means of communication.[24] The communication interests are seeking to eliminate this legal barrier on the ground that separate operation of wire communication is uneconomic and bad national policy. At the present time, international radio communication is controlled by the Radio Corporation of America, which has no domestic line or ether system. The Radio Corporation would prefer to unite with one of the land-line telegraph companies, The International Telephone and Telegraph Company, rather than to compete within the country. It should be noted that not all of the communication interests favor co-ordination. The Western Union Telegraph Company deplores the elimination of the stimulating effects of competition in the communication of intelligence. The independent radio companies, probably to spite the R. C. A., have also opposed consolidation of wire and wireless.[25]

The criticism that competition between wire and wireless, cable and radio, is uneconomic is predicated on the conviction that each method of communication has peculiar advantages which render its use in particular circumstances essential. Greater secrecy and greater reliability in all atmospheric conditions give wire communication advantages for coded traffic for expeditious treatment. Short-wave wireless, especially of the beam type, is particularly suitable for deferred traffic.[26] The public interest can only be attained in the most complete fashion, it is alleged, by permitting the co-ordination of the means of communication. Especially is this so because other countries, particularly Great Britain, have unified their communication facilities and threaten to endanger the safety and foreign trade of the United States by domination of overseas communication.[27]

Monopoly of public utilities is not always dictated by economic con-

[24]Section 17 of the Radio Act of 1927 reads in part: "After the passage of this Act no person, firm, company, or corporation . . . . in the business of transmitting and/or receiving for hire energy, communications, or signals by radio in accordance with the terms of the license issued under this Act, shall . . . . directly or indirectly, acquire, own, control or operate any cable or wire telegraph or telephone line or system . . . . or shall acquire, own, or control any part of the stock or other capital share of any interest in the physical property and/or other assets of any such cable, wire, telegraph, or telephone line or system, if in either case the purpose is and/or the effect thereof may be to substantially lessen competition or to restrain commerce . . . . or unlawfully to create monopoly." Gibbs, G. S., "Should Our Radio, Wire, and Cable Utilities Be Combined?" *Public Utilities Fortnightly*, Vol. 3 (1929), p. 766.

[25]Harbord, J. G., "How Unified Communication Would Aid American Business," *Sales Management*, Vol. 18 (1929), p. 647; *Congressional Digest*, Vol. 9 (1930), pp. 113-116.

[26]Brown, F. J., "Relations Between Cable and Wireless," Chap. VIII in *The Cable and Wireless Communications of the World*. Cf. Gibbs, G. S., "Should Our Radio, Wire, and Cable Utilities Be Combined?" *Public Utilities Fortnightly*, Vol. 3 (1929), p. 766.

[27]Shoup, G. S., "The Control of International Cable and Radio Communications," *Congressional Digest*, Vol. 9 (1930), p. 107; Tribolet, L. B., *The International Aspects of Electrical Communications in the Pacific Area*, pp. 261-271.

sideration alone; political factors, as in this case, need to be taken into account. While the argument for coordination seems logical, and bears the approval of many authorities, the possibility of extortion by a monopoly on so great a scale and rendering an essential service requires the provision for a vigorous federal control over its rates and services in this country if private interests are to continue in control of communication service. International complications and the probable necessity for treaties would make the attainment of such control difficult.

Local Transportation

The momentous changes, and the resultant instability, in the business of local passenger transportation in the past ten or fifteen years have caused much concern among operators, the public, regulators, and students. It may fairly be said that until the war period, the street railways were proceeding calmly in the prosecution of their business under the impression that theirs was a "natural" monopoly. It is small wonder that subsequent developments have given them a jolt from which they have not yet recovered.

The following discussion is limited to local passenger transportation. It will be recognized by everyone that in many respects the problems associated with competition in the realm of local transportation are paralleled in the field of steam railroad and other interstate transportation. But the examination of competition in transportation is an immense undertaking, and it is presumptuous to state the problem even as to local conditions in just a few pages. The purpose is to appraise the extent of and the probable future trend of competition in local transportation.

To claim that in the immediate past the business of local transportation has not been the scene of fierce competition is to disregard common experience, universal decrease in street railway revenues, and numerous receiverships. Undoubtedly, the failure of the street railway companies to provide good service partly explains the susceptibility to competitive attack, just as it has in the case of the steam railroads. Mountainous capitalizations, created in the more serene days of strong monopoly, have resulted in inflexibility and have made the traction companies loath to adjust fares to changed conditions of demand. As time passes and perspective is gained. it becomes increasingly apparent that local transportation has been and is passing through a transition that is akin to a revolution in methods of carriage.

The private jitney,[28] the motor bus, and more recently the cut-rate

[28] *Memphis Street Railway Company* v. *Rapid Transit Company*, (Tenn. Sup. Ct.) 179 S. W. 635, P.U.R. 1916A, 834; *Re People's Motor Bus Company* (Ill.) P.U.R. 1918C, 903; *Re Wisconsin Gas and Electric Company* (Wis.) P.U.R. 1918E, 752.

taxi[29] have in turn been the cause of unstable transportation in cities. The greatest source of competition for the electric railway has not been a public conveyance, however, but the private automobile.[30] On the strength of the competition between the various forms of local passenger transportation, the suggestion has been made that commission regulation of rates is both futile and unnecessary.[31]

Ordinarily, neither the public nor the law is specially concerned with the competitive pressure which a private enterprise meets in the form of a substitute. That has not been the case in the local transportation business, however, because none of the other means of transportation has proved to be a satisfactory substitute for the railway for mass transportation in large cities. Moreover, present patronage by the public is not always conclusive evidence of the desirability of a particular type of service, if an uneconomic appeal to the public has been made by the operators of alternative facilities who are ignorant or unmindful of the necessity of charging for depreciation on the investment and for other of the less tangible costs or if the existing agencies for mass transportation fail to provide good service at reasonable rates because of a desire to protect past investments and inflexible financial structures. The relative merits for public service of the jitney and the cut-rate taxi, on the one hand, and the organized street car, elevated, subway, or motor bus system suited to furnish mass transportation, on the other, are brought to mind in this connection. Facilities to move large numbers of people rapidly with economical use of limited space are the prime transportation requirement in congested urban areas.

That three-fourths of all passengers entering and leaving the central business district of a large city do so by means of public conveyance is testimony to the desirability of maintaining common carrier transportation on an efficient and paying basis. A count of traffic in Brooklyn showed that 24.2 per cent of all shoppers used the surface cars, and that less than ten per cent were carried to the shopping districts by automobiles, including taxis. Eighty-five per cent of the shoppers used some form of public conveyance.[32] In the smaller cities the private automobile shows a higher percentage of use. Nevertheless, a count in South Bend,

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[29]Welch, F. X., "The Taunt of the Taxi-Cab to the Street Car," *Public Utilities Fortnightly*, Vol. 5 (1930), p. 656. Cf. Hunter, J. G. (Transportation Engineer, California Railroad Commission), *Effect of Fare Changes on Street Railway Operations in California*, 1929, p. 7: "The taxicab business . . . . with lowering of rates and introduction of lightweight cabs, gives promise of increasing competition with street railways. This is particularly true of short haul travel where the taxicab rate for three or four persons may compare with or actually be less than the street car fare."

[30]Hunter, J. G., *op. cit.*, p. 12; American Bankers Association (Commission on Commerce and Marine), *Automotive Transportation and Railroads*, 1927, pp. 5-8, 29; *Re Lincoln Traction Company* (Neb.) P.U.R. 1921B, 160.

[31]Welch, F. X., "The Futility of Commission Regulation of Street Car Fares," *Public Utilities Fortnightly*, Vol. 5 (1930), p. 761.

[32]*Electric Railway Journal*, Vol. 73 (1929), p. 1122.

Indiana, with a population of 85,000, showed that the private automobile carried only twenty-four per cent of the total traffic. It is possible, too, that public transportation would be more popular in the smaller cities if more convenient facilities were offered.[33]

The state regulatory commissions have sponsored stable local transportation by considering all forms of common carrier transportation as a unit in their determinations as to whether convenience and necessity require additional service. The reasoning has been that it is just as much contrary to the public interest to allow unrestricted competition between common carriers of different types as it is to allow those of the same class to compete without limitation.[34] It has become the policy of the majority of the commissions to give existing service an opportunity to provide additional and substitute service which may be considered necessary.[35] There does not seem to be much doubt as to the right of the commissions to administer the convenience and necessity laws in this manner, in view of the general terms in which the legislation which gives them power is clothed.[36] In court review, only the Michigan commission has been denied the right to protect street railways and buses from competition with each other. The Michigan supreme court has decreed that "if it be desirable to clothe the commission with the power to prevent such competition by refusing to permit motor vehicles to operate, when the service rendered by the steam and electric railroads is adequate to the needs and convenience of the public, we think the legislature should so provide in no uncertain language."[37]

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[33] Kelker, R. F., Jr., *Electric Railway Journal*, Vol. 72 (1928), p. 576.

[34] *Re Public Auto Association* (N. H.) P.U.R. 1919E, 151; *Re Stedman* (Wash.) P.U.R. 1925D, 819; *Re Wells R. Struper* (Utah) P.U.R. 1924B, 398; *Re Townsend* (Colo.) P.U.R. 1928A, 175; *Re People's Motor Coach Company* (Ind.) P.U.R. 1926A, 385.

[35] *Re Washington Rapid Transit Company* (D. C.) P.U.R. 1923B, 328; *Re Kipp's Express and Van Company* (Ill.) P.U.R. 1923E, 249; *Re Blue and Gray Bus Line* (Utah) P.U.R. 1924A, 440; *Re Weiner* (Mo.) P.U.R. 1925B, 357; *Re Murphy Transfer and Storage Company* (Minn.) P.U.R. 1927C, 806; *Re Reading Transportation Company* (Pa.) P.U.R. 1927E, 636; *Re Midwest Transit Company* (Mo.) P.U.R. 1928C, 311.

[36] "No license, permit or franchise, shall be granted to own, operate, manage, or control any plant or equipment for the conveyance of telephone messages or for the production, transmission, delivery, or furnishing of heat, light, water, or power, where there is in operation under an indeterminate permit a public utility engaged in similar service without first securing from the commission a declaration, after a hearing of all parties interested, that public convenience and necessity require such second utility." Wisconsin *Statutes*, 1929, Sec. 196. 50.

"No public utility shall begin the construction of any new plant, equipment, property or facility which is not in substitution of any existing plant, equipment property or facilities or in extension thereof,, or in addition thereto, unless and until it shall be obtained and until it shall have obtained from the Commission a certificate that public convenience and necessity require such construction." Illinois Public Utility Commission Law, June 30, 1931, Section 55.

"No street railroad corporation, gas corporation, electrical corporation, telephone corporation or water corporation shall henceforth begin the construction of a street railroad, or of a line, plant or system, without having first obtained from the commission a certificate that the present or future public convenience and necessity require such construction." Public Utilities Act of California, Statutes of 1911, Section 50, *Report of the Railroad Commission of California, 1911-1912.*

[37] *Rapid Railway Company* v. *Michigan Public Utilities Commission* (Mich. Sup. Ct.) 196 N. W. 519, P.U.R. 1924B, 585.

The Michigan law is similar to that of other states: "After thirty days from the effective date of this act, no business of transporting persons or property by motor vehicle, for hire, upon or over the public highway of this state, over fixed routes or between fixed termini, or hold themselves out to the public as being engaged in such business unless and until they shall have obtained from the Michigan public utility commission a permit to do so, which said permit shall be issued in accordance with public convenience and necessity and shall not be assignable." *Laws of Michigan*, 1929, Sec. 11342.

Other state courts have upheld the commissions in preventing competition between motor

But while the commissions have sought to protect essential and indispensable service from unrestricted, temporary, and in some cases unremunerative competition from alternative sources, most of them have been wary of going too far with such a principle. Few states have given their commissions the power to limit taxi competition,[38] but the practice of running immediately ahead of authorized public utility carriers has been considered by the Illinois Commerce Commission as the assumption of a public utility function not to be indulged in without a certificate.[39] Taxi competition warrants legislative attention, for in many communities the cab has ceased to be the aristocrat of local transportation and has degenerated into a new type of cut-rate jitney.[40] In many cities taxi rates are actually lower than street railway fares. Since much of taxi service does not pay its way, and leads to traffic congestion and competition detrimental to public welfare, its control is desirable, even imperative, especially in the larger cities.

The monopoly principle has not been considered conducive to public welfare when the introduction of a superior service is proposed.[41] The regulatory bodies have realized that the newer forms of transport have a legitimate place and are here to stay in many cases. The commissioners cannot be too sure that trusting the devolopment of an infant industry to those who may not be particularly interested in its growth is consistent with progress. A fair measure of experimentation is indispensable, even though it be attended with a temporary disruption of stability in transportation.[42] It is not always possible clearly to draw the line in the beginning without a trial between that competition which is wasteful of resources and conducive to an unnecessary instability of carrying facilities and that introductory period of rivalry which is essential to a determination of the proper niche of each method of transportation. Nor ought the commissions to go too far with the vague doctrine that for an additional service to be desirable "the public must be concerned, as distinguished from any number of individuals."[43] The indefiniteness of the statement is testimony to the fact that the rules in the matter of

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and rail vehicles. See *McLain* v. *Public Utilities Commission* (Ohio Sup. Ct.) P.U.R. 1923E, 712, 143 N. E. 381; *West Suburban Transportation Company* v. *Chicago & West Towns Railway Company* (Ill. Sup. Ct.) P.U.R. 1923E., 150, 140 N. E. 56. In the latter case, the court called attention to the fact that a "commission has no arbitrary powers. Its orders must be reasonable and lawful, and the question whether they are so or not is subject to review on appeal."

[38]Connecticut has such a law (*Public Utility Act of 1929*, Chap. 292). The Pennsylvania Commission also has power to limit taxi competition, *Re Universal Cab Company* (Pa.) P.U.R. 1930D, 178. Cf. Lilienthal, D. E., and Rosenbaum, I. S., "Motor Carriers and the State," *Journal of Land and Public Utility Economics*, Vol. 2 (1926), p. 257.

[39]*United Motor Coach Company* v. *Eggert* (Ill.) P.U.R. 1929E, 305.

[40]Welch, F. X., "The Taunt of the Taxicab to the Street Car," *Public Utilities Fortnightly*, Vol. 5 (1930), p. 656.

[41]*Re Phoenix Water Power Company* (Ariz.) P.U.R. 1916C, 239; *Allegheny Valley Street Railway Company* v. *Greco* (Pa.) P.U.R. 1917A, 723; *Re Wedgewood* (Utah) P.U.R. 1921D, 262; *Public Service R. Company* v. *Mayr* (N.J.) P.U.R. 1927A, 759; *Re Wright* (Va.) P.U.R. 1925B, 141.

[42]*Re Pacific Electric Railway Company* (Cal.) P.U.R. 1922C, 150.

[43]*West Suburban Transportation Company* v. *Chicago and West Towns Railway Company* (Ill.) P.U.R. 1923E, 150, 156, 140 N. E. 56; *State Public Utilities Commission* ex rel. *Chicago Board of Trade* v. *Toledo, St. Louis and W. R. Company*, 286 Ill. 582, P.U.R. 1919C, 620.

regulating competition between transportation substitutes are not clear-cut. It would not be accurate to give the impression that commission policy has been uniform among the states, or even that a single commission has always been consistent with itself. Commissioners are sometimes, and perhaps necessarily, opportunists.

The regulation of indirect competition has been almost wholly confined to the transportation utilities, perhaps because it has been a more pressing problem there. In the electric, gas, and telephone businesses commissions have no regard for substitutes as a general rule.[44] Electricity generated by steam and electricity generated by falling water, however, have not been considered two different kinds of service from this viewpoint. And in some cases, artificial gas companies have not been subjected to competition from natural gas companies seeking to enter, but the existing company has been directed to purchase its gas from the natural gas enterprise at the city limits.[45] The Pennsylvania Commission, on the other hand, refused to protect an artificial gas utility from competition with the cheaper natural gas service.[46]

The tendency in the field of local transportation is away from the competitive circumstances of the past few years. With commissions approving, the belief predominates that there is a proper place for all—the street railway, subway, elevated, bus, taxi, and the private automobile.[47] Moreover, co-ordination and differentiation of function are not merely dreams; they are accomplished facts in not a few cases. The total number of motor carrier buses operated in the United States increased only from 32,000 to 33,000 during the period from 1926 to 1930; at the same time buses operated by electric railways increased from 5,150 to 11,250.[48] In the principal cities, not only of this country but of the world, real effort is being made to create unified local transportation systems.[49] In Philadelphia, co-ordination of common carriers, including taxi-cabs, under private control, was brought about several years ago. The most ambitious unification scheme is that of Public Service Co-ordinated Transport, a New Jersey corporation operating 2,390 street cars, 2,406 motor buses, nine ferry boats, and sixty-seven taxis in that state.[50]

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[44] *Re W. Va. Power and Transmission Company* (W. Va.) P.U.R. 1930D, 240; *Re Ogden Gas Company* (Utah) P.U.R. 1929B, 127; *Re B. W. Dalton* (Utah) P.U.R. 1922E, 847; *Re Markham* (Mo.) P.U.R. 1916A, 1007.

[45] *Re Independence Natural Gas Company* (Mo.) P.U.R. 1923D, 433.

[46] *Re People's Natural Gas Company and Borough of Juanita* (Pa.) P.U.R. 1915C, 696.

[47] George, J. J., "Recent Trends in Motor Carrier Regulation," *Bus Transportation*, Vol. 9 (1930), p. 393; Fitzgerald, R. L., "A New Era for City Transportation," *N. E. L. A. Bulletin*, Vol. 11 (1924), p. 671; Trumbower, H. R., "Regulation of the Common Carrier Motor Vehicle," *American Economic Review Supplement*, Vol. 19 (1929), p. 234; Slater, J. E., "A Study of the Motor Bus as a Competitor of the Railroads," *Journal of Land and Public Utility Economics*, Vol. 2 (1926), p. 129; Shave, G. J., "The Sphere of Transport Facilities as Gleaned from London Experience," *Bus Transport*, Vol. 9 (1930), p. 381.

[48] National Association of Motor Bus Operators, *Bus Facts for 1930*, p. 5.

[49] Fenelon, K. G., *Economics of Road Transport*, p. 191.

[50] McCarter, T. N., "Developing Unified Transportation," *Bus Transportation*, Vol. 8 (1929), pp. 614-617.

In this field of public utility service, it has not been the ruinous effects of competition alone which have prompted unification. Traffic congestion has become a vital problem in American cities.

Efficiency in street usage demands the use of each type of vehicle only for the service which it is best suited to perform; the attainment of such an ideal can be approximated through co-operation, but not by means of unbridled competition. When a traffic count at a principal New York City intersection during a rush hour discloses the astounding information that seventy per cent of the traffic consisted of taxicabs, sixty per cent of them empty, evidence of the uneconomic use of the streets is clear.[51]

The restraint on public transportation rates exerted by the private automobile, assuming co-ordination of public transport, while noticeable in its effects during the last ten or fifteen years, is inadequate for traffic reasons alone. The resulting congestion if all persons used the private automobile exclusively for transport purposes would be prohibitory. Reduced speed due to stop lights and traffic policemen at each intersection, as well as the scarcity, inaccessibility, and expense of parking spaces, must limit automobile traffic within the crowded city districts and drive people to the cheaper, less nerve-racking, and often more convenient common carrier.

There is an even stronger reason for denying the competitive determination of rates by automobile competition in the fact that not everybody can afford private transportation. It must be kept in mind that three-fourths of all transportation users patronize public conveyances by virtue either of financial necessity or of convenience.[52] There are substitute forms of service in local transportation, but they are not equivalent. There are alternatives which are, somewhat paradoxically, also complementary to each other. Competition has been keener in the local transportation field than in the case of the other local public utilities, and this competition has had a peculiar and quite unwholesome effect on rates for public transportation service. The street railway operators, their revenues diminished by ravishing competition, have adopted the policy of increasing their fares in an effort to avert bankruptcy. The steam railroads, it may be noted, have followed the same questionable rate practice in an attempt to offset the decreases in traffic and revenue caused partly by competition. As a consequence of the higher rates, of course, it has been all the more difficult to combat the competition. Where public

[51] Welch, F. X., "The Inevitable Regulation of the Taxi," *Public Utilities Fortnightly*, Vol. 5 (1930), p. 829.

[52] Forbes, B. C., "Buses v. Street Cars," *Forbes*, Vol. 22 (1928), p. 13.

utility enterprises are involved, therefore, competition does not always result in low rates. Uncontrolled competition under these circumstances is contrary to the public interest, because it forces a necessary public utility to function on an insufficient revenue diet.

Prophecy as to future developments in local transportation, especially with respect to the relationship between individual and public utility mass transportation, is injudicious.[53] Nevertheless, it does seem that competition will wane after a period of transition and instability in city transportation has demonstrated that satisfactory transportation service and desirable distribution of the population require conservation of street space by the elimination of unutilized carrying capacity, and that efficient public transportation facilities are unattainable unless there is some protection against unrestricted duplication of facilities. It is shortsighted to rely upon the temporary rate cutting which unlimited competition may (or may not) induce when the most important consequence of unnecessary duplication is a chaotic condition which requires the lessening or elimination of competition in order that stable and efficient transportation service at reasonable rates may be available.

Limits to Inter-Utility Competition

In local transportation, composite operation, or co-ordination of services, has made some progress with the support of regulatory commissions. The same tendency toward co-ordination in the gas and electrical industries is noticeable, but it has been accomplished without legal encouragement, and generally speaking with different motives. The preceding pages have demonstrated that with respect to some uses the comparative cost and desirability of gas and electricity would make them closely competitive. The extent to which the two types of utility are subject to one control requires a qualification of their competitive relationship.

The accompanying table is evidence that 40.1 per cent of the revenue of the manufactured gas industry is received by companies which are operated in conjunction with electrical utilities. Census figures for the electrical industry for 1927 show that the 711 composite privately-owned electrical utilities received 61 per cent of the total revenue of the industry,[54] The latter figures include those electric light and power establishments which operate electric railways, water companies, ice companies, and other projects, in addition to those cases where gas companies are affiliated with electrical enterprises. Compositeness in public utility op-

[53] Cf. Rapid Transit Commission of Detroit, *The Relation of Individual to Collective Transportation*, 1928.

[54] Bureau of the Census, U. S. Dept. of Commerce, *Central Electric Light and Power Stations*, 1927, Table 5, p. 21.

eration, already appreciable, is increasing, and it is in the larger companies that the tendency is most pronounced.[55]

Community of interest among utility companies, and especially between gas and electrical utilities, is not limited to the cases where there is unified operation. Affiliation of operating units with holding company

DISTRIBUTION OF REVENUE RECEIVED BY THE MANUFACTURED GAS INDUSTRY IN 1929 FROM SALE OF GAS TO CONSUMERS*

	Revenue received from sale of gas to consumers in 1929	Per cent of total for entire industry	Per cent of group total
Group 1:			
Companies selling gas only or gas and water:			
a. Controlled by holding or managing companies	$180,969,000	34.5	57.6
b. Independently operated	108,036,000	20.6	34.4
c. Municipal establishments	25,044,000	4.8	8.0
Total for Group 1	$314,049,000	59.9	100.0
Group 2:			
Companies selling electricity and gas:			
a. Controlled by holding or managing companies	$160,116,000	30.6	76.3
b. Independently operated	47,574,000	9.1	22.7
c. Municipal establishments	2,201,000	0.4	1.0
Total for Group 2	$209,891,000	40.1	100.0
Grand total	$523,940,000	100.0	
Sum of Groups 1 and 2:			
a. Controlled by holding or managing companies	$341,085,000	65.1	
b. Independently operated	155,610,000	29.7	
c. Municipal establishments	27,245,000	5.2	
Grand total	$523,940,000	100.0	

*Data submitted by the statistical department of the American Gas Association.

organizations is usual in both the gas and electrical industries.[56] Referring again to the data in the accompanying table, it will be noted that sixty-five per cent of the total revenue of the manufactured gas industry was received by operating companies controlled by holding corporations. Moreover, practically all of these holding company organizations include

[55] *Ibid.*

Year	*Number of composite establishments*	*Total revenue of composite establishments*
1927	711	$1,244,465,086
1922	1192	490,801,648
1917	1437	197,842,234
1912	1450	127,380,872
1907	1335	60,408,072
1902	1046	24,279,763

[56] This matter was discussed briefly in Chap. III.

both gas and electric units in their properties.[57] In Massachusetts, the electric business is carried on by seven large systems, there being only eight private independent companies remaining. Of these seven systems, five also are numbered among the seven large systems controlling gas production and distribution.[58] The Western Massachusetts group also produces a small amount of gas. Such are the circumstances in a state that has not encouraged common control of gas and electrical properties.[59]

The rapid expansion of the natural gas industry in recent years has stimulated the use of gas and has been offered as additional evidence that the market for fuels is highly competitive.[60] Efforts to spread the use of natural gas have been strenuously opposed by those who have vested interests in manufactured gas and who are concerned, therefore, to ward off the threat of displacement by the cheaper and richer fuel. Even the protective obstructions which develop out of this situation have been referred to as the "competition" that natural gas encounters. The natural gas industry is itself organized on a complex monopolistic basis centering around the control of the pipe lines by a few dominant companies.[61] Moreover, the corporate systems exploiting natural gas have financial interests in manufactured gas companies and in gas distributing systems, and they are interrelated through holding companies with the same community of interests that dominates substantially the electric light and power industry. Recognizing the essentially monpolistic nature of these intercorporate arrangements, the Federal Trade Commission has recommended the separation of the gas and electric industries.[62]

Regardless of whether the specific aim in combining gas and electrical utilities has been to obtain the profits which result from pooling the earnings of classes of service some of which have poor and some good net returns,[63] to achieve economies in joint operation,[64] or to eliminate com-

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[57]Field, Kenneth, "Composite Public Utility Companies: Some Causes and Effects on Public Utility Holding Corporation Systems," *Journal of Land and Public Utility Economics*, Vol. 6 (1930), p. 74.

[58]Commonwealth of Massachusetts, *Report of the Special Commission on the Control and Conduct of Public Utilities*, March, 1930, pp. 20, 22.

Systems in Order of Volume of Retail Electric Business:	*Systems in Order of Volume of Retail Gas Business:*
a. Edison Elec. Illum. Co.	a. Eastern Gas & Fuel Assoc.
b. New England Power Assoc.	b. Tenney Properties
c. Western Mass. Companies	c. Assoc. G. & E. System
d. Tenney Properties	d. Mass. Utilities Assoc.
e. Mass. Utilities Assoc.	e. Stone & Webster
f. Assoc. G. & E. System	f. New England Power Assoc.
g. Stone & Webster	g. Western Mass. Companies

[59]*Ibid.*, p. 15.

[60]Federal Trade Commission, *Utility Corporations*, Part 84A, *Economic, Corporate, Operating, and Financial Phases of the Natural-Gas-Producing, Pipe-Line, and Utility Industries, with Conclusions and Recommendations*, 1936, pp. 47, 50, 145, 254.

[61]*Ibid.*, pp. 582-610.

[62]*Ibid.*, p. 617.

[63]Field, Kenneth, *loc. cit.*, p. 77.

[64]The possible savings are not limited to economy of overhead expense by the joint operation of enterprises which require similar types of organization. "Well-conceived co-operation of different power producing plants is recognized as a particularly important preliminary condition for the improvement of the market for energy . . . . It is, in fact, evident from the papers submitted that the problem of joint operation is no longer restricted to the load balance between two hydro plants with a stream flow varying according to the season, between load remote and local power stations or older peak-load and modern base load steam power plants, but also extends to the large areas and even the combination of gas and electricity works for the supply of energy on the broadest basis.

petition,[65] the effect in one respect is the same. Competition between the two public utility services exists only in name when common contol has been achieved.

If the opinion of some of the gas men is representative of the facts, composite operation has resulted in a neglected and deteriorated gas service, because chief attention has been centered on the electrical branch of the business.[66] Lack of attention to the advancement of gas utilization has been noticeable particularly in the market for heat where, despite the fact that gas is usually the more economical heat treatment, electricity has succeeded in gaining a substantial foothold. Neither has gas made a record in its battle with the crude fuels for the heating business that compares with the advance made by the electrical industry in the realm of power.

The superior progressiveness in the field of electricity is denoted by the greater devotion to research in that phase of public utility service. Constant refinement in technology, for example, in the improvement of generating units, with consequent lowering of the cost of service, has been one result. The electrical industry has made notable progress also in the development of cheap and efficient appliances for both domestic and industrial use. In this, the central station industry has benefited materially from its contacts with progressive manufacturing organizations like General Electric and Westinghouse, which have been engaged in providing the requirements for advancement in production and utilization technique. The gas industry has not been supported by a correspondingly strong equipment manufacturing organization whose energy was concentrated on laying the groundwork for a great industry. The gas industry has not possessed the spectacular or romantic appeal which has characterized the electrical industry, and so it has failed to attract a comparable share either of business enterprise or engineering talent, until recently when natural gas has been a rousing force.

It has even been asserted in some quarters that electricity eventually will displace gas entirely as a source of energy. It is pointed out that in that event a considerable saving will result, due to the need for only one system of production, distribution, and transmission and to the avoidance of a double installation on the customer's premises. In fact, this train of thought can be detected in the sales and rate policies of electrical

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[65] "In areas in which electricity supply is chiefly derived from coal, increasing importance attaches to the question of whether the combination of electricity and gas works, either only in regard to the generating plant on a mutual heat economy basis or with regard to the entire system including generation, distribution, and sale of power, allows of tangible economic advantages in the sense of an increase and improvement in the total power market being expected." "Trend of Development," *Transactions of the World Power Conference, 1930*, Vol. 11, Sec. 17, p. 310.

[66] Federal Trade Commission, *Supply of Electrical Equipment and Competitive Conditions*, 1928, p. 167.

[67] *Re Helena Light and Railway Company* (Mont.) P.U.R. 1920D, 717; Hodge, W. H., "Selling Gas Against Modern Competition," *American Gas Association Monthly*, Vol. 12 (1930), p. 594; Addison, S. G., "Peterson Explains the Need of Competition in Selling," *American Gas Engineering Journal*, Vol. 112 (1920), p. 89.

utilities at the present time, especially with regard to the heating load.[67] The salesmen of electrical heat have been wont, when approaching a potential heat customer, to present the cost of the service on an added business basis. In other words, the cost per kilowatt-hour used by the customer for heat applications has been figured entirely on the lowest step in the rate applicable to the customer, usually a charge for energy only. The other parts of the customer's total load, viz., lighting and power, then carry all of the burden of the demand and customer charges. The customer by confining himself to electricity avoids a double installation and the payment of a demand and customer charge on both of them. From the viewpoint of the central station, the competitive heating business has been considered profitable if it bears little more than the cost of generation only, without regard for costs of transmission and distribution, practically all of which must be sustained anyway in order to render light and power service.[68] The urge to develop the heating load is accentuated in those cases where it would be off-peak business.[69]

The defensibility of the cost allocation involved in the above policy is not of primary interest here. Ultimately the issue is that of balancing the saving which is realized from the elimination of the gas system and the customer's installations against the saving that results from the use of the technologically more economical heat agent—gas.

Where the need for heat is not great in amount, it is reasonable to believe that the odds may favor the existing electrical installation as the source of energy when a crude fuel is being abandoned. As rates are now formulated, the additional energy would cost the user comparatively little. Moreover, it is improbable that gas utilization ever will make appreciable headway in rural or other sparsely settled areas. It is conceivable that the gas industry may even be doomed in very small villages and towns by the advance of electrical efficiency and because of the limits to the potential demand for energy of any sort. These exceptions taken into account, there seems to be no reason to sound the death knell for the gas industry, provided that it is fully alive to its opportunities. It is questionable whether the cost of a duplicate installation looms large in comparison with the natural advantages of gas as a heat treatment.

The point that is of direct significance in this discussion is whether the gas-versus-electricity issue can be settled conclusively as long as the two are, in the main, jointly controlled. The monopoly which includes

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[67] Miller, W. J., "Report of Competitive Fuels Committee," *Proceedings of the American Gas Association*, 1928, p. 760; Chubb, C. N., "Gas versus Electricity," *The Gas Age*, Vol. 41 (1918), p. 172.

[68] McMichael, Paul, "What Price Surplus Energy?" *Electrical World*, Vol. 95 (1930), p. 935.

[69] ". . . . from the viewpoint of the central station, electric heating load should be classified as a load of exceptional character. It quite often is of a continuous nature, comes on during the off-peak period, and maintains a high power factor. Furthermore, it shows a much greater consumption per kilowatt connected and, subsequently, a greater return on plant investment than the ordinary power load." Ricker, B. M., "Industrial Electric Heat," *N. E. L. A. Bulletin*, Vol. 16 (1929), p. 287.

both industries now is little concerned with the social problem of which service is more economical of natural resources in a given circumstance in terms of energy units and results obtained. Since the public utilities have no vital interest in the matter, they can be expected to take a neutral attitude and let uninformed public opinion decide for itself unless the latter policy interferes with profits.

If it be true that gas and electricity are natural competitors in a considerable part of the range of their respective uses, the public cannot reap the benefit of that situation under the present ownership set-up. On the other hand, if the two are not inherently competitive, there still is to be determined definitely the field of best adaptation for each of them. The present subservience of the two types of energy to the same control thwarts that aim also. It may be true that the economies from the joint operation of the essentially similar types of business enterprise are great; but perhaps the consuming public could bear that loss if it were to gain the advantage of knowing what the fundamental marketing relationship between these two services really is.

Even though a lively rivalry exists between the jointly-operated or jointly-owned utilities, the race will be a demonstration of initiative and progressiveness in salesmanship rather than of price or rate competition. The essence of competition is absent, since there is no independence of action. There is competition only in the sense that inter-departmental rivalry is competition. However, it is scarcely logical to give price-determining force to the "competition" of a music store with itself in selling both radios and phonographs, or of the Standard Oil Companies in selling both gasoline and kerosene. The electrical and gas industries are in a similar position to the extent that their policies are subject to the same final authority.

Conclusions on Competition from Substitutes

The claim that competition by substitution is so all-pervasive in the public utility industries as to afford a basis for rate control cannot be substantiated. Permitting complete initiative in rate making to management, and consequent charging on a traffic-will-bear-basis, cannot be regarded as more than a simple but socially impracticable remedy for present regulatory ills and an unconditional surrender to the dogma that efficient and energetic management can exist only where there is no restraint on freedom of action and on profits.

That part of public utility service which is furnished to large industrial plants meets a fairly high degree of competition from alternative sources of fuel and power. But even this statement is subject to modification, for past experience indicates the gradual ascendancy of central station electric power; and it is likely that the impression of the highly

competitive nature of the industrial power business is gained from an overemphasis of those comparatively exceptional situations where special circumstances make the cost of generating electricity in conjunction with industrial processes unusually low. The impression that all power business is within the potential market for central station service also leads to confusion as to what the term competition encompasses. In cases where a rival process has proved its superiority over a public utility service, there exists, not an example of competition, but of its extinction, although an opportunistic and discriminating rate policy may furnish the earmarks of close and strenuous competition. A more consistent and uniform rate policy with less rate shading on a preferential basis would undoubtedly bring to an end much of what now passes for competition among various methods of energy supply and application.

The inconvenience and the cost of conversion from one source of heat or power to another due to the need for expensive equipment of a specialized nature is a real obstacle to free competition, not only in serving industrial consumers of utility service, but every other class as well. Moreover, it should not be overlooked that whereas in the first instance a public utility may experience the restraining influence of expensive investment in its campaign to introduce widespread use of its service, even when rates and the character of the service may be such as to suggest the economy of that procedure, the circumstances are the same in the other direction, so that the transition once made, the public utility has gained a monopoly advantage in the same manner, by virtue of the disinclination of the consumer to discard expensive and specialized equipment.

The power of substitution is active within closer limits of price range in the industrial power and heating service than in the other classes, because the alternatives are more equivalent, both cost and quality of service considered. Nevertheless, in industrial heating, and in communications and transportation too, a differentiation of economic function between the apparently competing services is manifest. In transportation and communications, the recognition that each type of service has a special province for which its properties particularly adapt it has resulted in the demand for the elimination of competition and the institution of a policy of co-ordinated control. Gas and electricity are suited for heat processes of a refined sort, but their cost, compared to that of the crude fuels, makes their universal application wherever heat is required extremely uneconomic. A brief for the competition of gas and electricity with each other would carry some weight were it not for the fact that the two industries are subject to a single control. It it were not for the joint control, a period of lively competition might lead eventually to the dem-

onstrated superiority of one or the other of them in many of their present uses. It is possible that a more positive differentiation of function might assert itself. Certainly, at any rate, there is a discernible tendency towards a differentiation of use between the crude fuels and the public utility services.

The presumption of strong competition in the rendering of public utility services is a result of the failure to realize that to a considerable extent the existing struggle of several products and services for the market is a manifestation of a period of transition. The electric light displaced the gas light and the automobile the horse, and there is evidence of a repetition of those experiences in the rendering of many public utility services. Such struggles are often bitter, but their impermanence makes it impracticable to base rate control on competition between substitutes.

The elasticity of the demand, which is due in part to possibilities for substitution, imposes a limit to the price that a monopolist can charge and still realize the maximum net profit. It is no new discovery that a public utility monopolist is prevented, because of the availability of substitutes, from charging as much as he would otherwise be disposed to do. Nor is a new economic doctrine invented when it is observed that in a monopolized industry wherein decreasing costs operate with special force and low rates greatly encourage increased use, the attainment of maximum profit will especially suggest the wisdom of imposing low rates yielding a small unit profit.

But it is a very different proposition that monopoly price in the case of a public utility exempt from competition with a like service will at once realize maximum profit and maximum use. Stated differently, there is no basis for the assumption that an unregulated determination of public utility rates will lead to charges that yield to the monopolist a return which covers all legitimate and necessary costs and no more. The substitutes are not, for the most part, sufficiently equivalent to the public utility service to be competent to effect cost price and adequate service.

It is true that in the event of charging what the traffic will bear the large users of public utility service would receive ample protection in some cases by virtue of the threat of substitution. But those who have no substitute which is interchangeable on approximately even terms are in the majority; and practically all domestic users are in the latter class. Household uses for public utility services can be characterized as competitive with alternative products and services only in those cases where the relative costs balanced against the relative qualities of the service strike an approximate equation, and where the consumers under consideration may be presumed to have the financial ability to choose the superior service.

Moreover, when part of the business is competitive and a part is not, the need for government regulation is as imperative as though monopoly were co-extensive with the entire service, for discrimination thrives in that kind of an environment. It is possible that the monopolist will be unduly conciliatory in his bargaining with the former, secure in the knowledge that the latter can be forced to bear a proportionately heavier burden. Especially is discrimination likely to occur in view of the modern rate-making practice of charging high rates for a minimum of use to cover all or most of the fixed costs incident to the rendering of service. This device, entirely reasonable when used properly, makes it possible for the public utility to charge a high monopoly rate for initial necessary uses, while encouraging the more elastic luxury uses with an inviting promotional rate. Accordingly, with the extension of use of utility services to more and more people who are dependent on a minimum amount, at least, of the service, the need will be for more and not less regulation in those industries where direct competition has been given both legal and economic disapproval. In this vein, the following chapter is a survey of rate-making practice, with particular reference to the part that competition plays in rate determination.

Chapter VIII

COMPETITION AS A FACTOR IN PUBLIC UTILITY RATE MAKING

Equitable Rates

The chief problem in public utility rate regulation, apart from the limitation of the profits of the enterprise considered as a unit, is to establish equitable rate relationships and to apportion fairly among the consumers the inseparable costs which are not strictly allocable to particular units of service.[1] The issue is whether rates should be formulated according to some notion as to the value of the service,[2] or whether cost allocation can and should be perfected to the end that each user will pay no more and no less than the actual cost of rendering him service.

The determination of the proper limitation of differentiation in rates, aside from the variations attributable solely to variations in the cost of rendering service, raises the question to what extent joint costs are present in providing public utility services. It has generally been accepted in economic theory that when two or more commodities or services can be provided at less expense by producing them together rather than singly—not as a consequence of any economies of large scale production but because the two or more economic goods have a common productive origin—they are joint products, and the theory of price determination under conditions of joint costs will prevail. The proposition is stated differently, but with the same significance, when it is declared that when two or more goods or services are the joint result of a single productive process, so that one of them cannot be supplied without facilitating the provision of the other, they are furnished under conditions of joint cost. Thus, cotton and cotton seed, wool and mutton, beef and leather, and kerosene and gasoline generally have been designated joint products. Under such conditions, the price of the single products cannot be determined by reference to their individual costs of production; and the costs that are joint will be apportioned in an unregulated market among the associated products in proportion to their respective demand schedules.

There has been no general agreement as to what particular types of economic enterprise successfully meet the above conditions of joint

[1] The discussion in this chapter is centered primarily on rates for electric service. Data are more available than for the other types of public utility enterprise, and rate strategy has attained the highest stage of finesse in the electric light and power industry. However, many of the conditions and policies described apply to the other public utility industries.

[2] The meaning of the term "value of service" will be discussed presently. It will suffice here to say that competition in the form of substitute services has been an important ingredient in the somewhat nebulous "value of service" concept. Cf. Wyman, Bruce, *Control of the Market*, p. 207.

cost production. Particularly, there has been a lively controversy relative to the legitimacy of applying joint cost pricing principles in the formulation of railroad rates. Professor Taussig is representative of a group who would give the principle of joint cost wide application. In the opinion of this group, "whenever a very large fixed plant is used, not for a single purpose, but for varied purposes, the influence of joint cost asserts itself."[3] From this point of view, it has been contended that the phenomenon of joint cost is dominant in railroad operation. The same reasoning, presumably, applies to rate making for the local public utilities with which the present study is concerned. This proposition has been criticized by, among others, Professor A. C. Pigou.[4] He believes that the existence of differential rates in the railroad industry is due to the price policy of a discriminating monopoly rather than to the presence of joint cost.

The disagreement is focussed on the question of whether or not public utilities offer one homogeneous service or a number of essentially distinct services, warrantably called joint services. Professor Taussig has stated that it is true that in one sense railways supply a homogeneous service—transport: "but I submit that they do not supply commodities and services which are homogeneous in the sense important for the purpose in hand—namely, as regards the conditions of demand . . . . They have differing demand schedules, and for that reason present the peculiarities resulting from joint supply."[5] Pigou objects to the proposition that different demand schedules introduce an essential heterogeneity of service which warrants the label of joint costs.[6]

It is doubtful whether the disagreement as to homogeneity can lead to anything except a logical impasse. When any two or more services are being considered, it is always possible to find some differences among them which can be used as a basis for distinction. If the concept of joint cost is to retain any special meaning at all, it is wise not to extend its scope to include all or most costs which generally have been entitled

[3]Taussig, F. W., "Principles of Economics," Vol. 1, p. 221. Cf. Haney, L. H., "Joint Costs With Especial Regard to Railways," *Quarterly Journal of Economics*, Vol. 30 (1915-16), pp. 233, 238-240. The latter writer says that if the expense is to be classed as joint, "the expense concerned must be necessary to the existence of each and every one of the different utilities. Unless the expense is incurred, no one of the utilities could be brought into existence . . . . This seems to the writer the better way of putting the idea that to be joint the one product must be a necessary result of the production of the other."

[4]See the controversy between Pigou and Taussig in the *Quarterly Journal of Economics*, Vol. 27 (1912-1913), pp. 378, 535, and 687. Cf. Pigou, A. C., "The Special Problem of Railway Rates," Chap. XV in *The Economics of Welfare*, pp. 256, 282.

[5]Taussig, F. W., "Railway Rates and Joint Cost Once More," *Quarterly Journal of Economics*, Vol. 27 (1912-1913), pp. 378, 381.

[6]"The proposition that the transport of copper and the transport of coal are joint products can, I think, easily be shown not to follow even if the general thesis, upon which Professor Taussig bases it, is accepted. For, this writer himself admits that the use of a very large fixed plant for varied purposes is essential to the operation of joint cost. . . . A sufficient answer to his thesis, therefore, is to observe that the carriage of tons of different things from A to B is a single homogeneous commodity, on precisely the same footing as plain cotton cloth. The fact that some 'carrying of tons' is sold to copper merchants and some to coal merchants does not imply that two different services are being provided, any more than the fact that some plain cotton cloth is sold in England and some is sold abroad implies that two different commodities are being provided." Pigou, A. C., *Wealth and Welfare*, pp. 216-217.

"overhead costs."[7] To quote Professor Pigou again, "The conjunction of large common supplementary costs with separation between the markets to which they are supplied does not make railway services joint products in this—the only significant sense. In order that they may be joint products, it is further necessary, not merely that additional investment in plant and so on may be used alternately to facilitate the supply to either market, but that such additional investment cannot be used to facilitate the supply to one market without facilitating the supply to the other."[8] This statement is a derivation from the familiar principle that all customers served under the same conditions should be treated alike. But it remains to decide what is meant by "same conditions" and what kinds and degrees of dissimilarity may be reflected in rates. Difficulty often is encountered in defining a commodity precisely for economic purposes. It is far more difficult to define a service, since the possibilities of small differences are very great. Interpreted broadly enough, two buyers with unlike demands can be said to be served under dissimilar conditions. The issue is whether the test of the same or dissimilar conditions should apply to variations in demand or only to conditions of supply. If the former is included, joint cost ceases to be a concept of limited applicability, all overhead costs are merged with joint cost, and discriminatory pricing is given an entirely free field in which to operate.

The particular problem in this part of the study is to decide to what extent differentiation may be employed in public utility rate making. The insistence that public utilities are joint cost industries has usually been predicated on the need for the most complete utilization of existing productive facilities.[9] In public utility operation the desirability of complete utilization is the fundamental issue in the argument for differential rates. Whether an electrical utility or a gas company furnishes what may properly be termed joint services in a strict sense appears to be somewhat less relevant.

As a matter of fact, some who deny that joint cost is typical of the railroad and public utility businesses as a whole, grant that in some cir-

[7] See Clark, J. M., *Economics of Overhead Costs*, p. 58. Cf. Kreps, T. J., "Joint Costs in the Chemical Industry," *Quarterly Journal of Economics*, Vol. 44 (1929), p. 416. A distinction between joint cost and overhead cost offered by Mr. Kreps (p. 418) is as follows: "Articles will be considered joint-cost products only when a variation in the facilities for putting out one product or one set of products necessarily brings about a variation in the same direction—somewhat so, though not necessarily in any definite ratio—in the facilities for putting out another product or another set of products. The two products when technically homogeneous must not have access to the same set of customers. If technically differentiated, they must not be substitutes. The most important effect of the presence of joint costs is the unavoidable, direct and perpetual interdependence of respective volumes produced and prices of the commodities in which the facilities are utilized." On p. 457: "If the products are rival products—that is, if by increasing the facilities for producing one of them . . . . the facilities for producing the other are decreased, or not changed at all—then merely overhead costs are present. If, however, by increasing the facilities for producing the one, the facilities for producing the other are unavoidably increased somewhat, then joint costs are present."

[8] Pigou, A. C., *Economics of Welfare*, p. 264.

[9] Taussig, F. W., "A Contribution to the Theory of Railway Rates," *Quarterly Journal of Economics*, Vol. 5 (1890-91) p. 438; Haney, L. H., *op. cit.*, p. 238.

cumstances the situation is so closely akin to strict physical jointness of production that no great amount of violence is done to the concept of joint cost if it is extended to include public utility service. Specifically, it is granted that when electrical or transportation service is offered to different persons at different *times* all of the essential conditions of joint cost production are present.[10]

The fact that some electric, telephone, street car, or gas service is demanded at night and some during the day and the additional fact that it is desirable to have an even load may warrant the practice of differential charging where the latter is necessary in order to get the business. There is advantage in discussing the desirability of differential rates from the standpoint of need for balanced load, or heavy utilitization, which is the vital thing. To discuss the matter in terms of joint cost is apt to imply that differential charging can be condoned only in those special cases where railroad or public utility service meet the essential requirements of joint cost production as defined above.[11]

If effect on cost is accepted as the sole criterion, the justification of differential rates for public service depends on whether or not the differentiation promotes more complete utilization of existing facilities.[12] If the acceptance of a given class of business results in better utilization, it means that unit cost has been lowered, and the differentiation principle is vindicated, at least on the basis of short-run cost calculations. There is a special premium on maximum utilization of facilities in public utility enterprises because of the fact that fixed costs are particularly dominant.[13] It has been estimated that thirty-five to forty per cent of the total investment in a central station project is in the generating plant, and that another thirty-five to forty per cent is in transmission and distribution equipment.[14] Consequently, there is a strong incentive to attract all possible business which will improve the percentage of utilization and increase the fixed capital turnover.

When a public utility service is demanded at different times by different consumers, therefore, the granting of inducement rates when necessary in order to attract load-balancing business otherwise unobtainable

[10]"It must be noticed, however, that the argument of the text (that transport in general is not a case of joint cost) is not applicable to the case of one sort of thing produced at two different times. Insofar as the service of carrying passengers is mainly required by day, while the service of carrying goods is mainly required by night, the day service and the night service may reasonably be regarded as jointly supplied, just as electricity furnished by day for power and electricity furnished by night for light may be so regarded." The same thing would be true, of course, of telephone or telegraph service; and back-haul service is acknowledged to be a true case of joint cost. Pigou, A. C., *Wealth and Welfare*, p. 216, and *Economics of Welfare*, p. 266. Cf. Clark, J. M., *Economics of Overhead Cost*, pp. 80-81, 101.

[11]In fact, it has been contended by Professor Pigou that unless a clear case can be made for the presence of joint costs, the rates for all service should be uniform, allowances being made for legitimate differences in cost. Pigou, A. C., *Economics of Welfare*, pp. 277-282.

[12]Watkins, G. P., *Electrical Rates*, p. 191. "The economic foundation for differential rates is the desirability of more fully utilizing a fixed-capital investment through the granting of specially low rates to business that can only be so obtained."

[13]*Supra*, Chap. III.

[14]Jones, G. H., "Effect of Load Factor on the Cost of Production and Methods of Improving the Load Factor," *Transactions of the World Power Conference*, 1930, Vol. 15, pp. 3, 5.

may be justified. In other words, there is no necessary inequity in the principle of charging low rates for off-peak service, and it is irrelevant whether such differential charging is based on an appeal to joint cost pricing. The existence of unutilized capacity which can be used without adding proportionately to cost is the pertinent consideration.

It is when the attempt is made to defend differentiation in favor of other than clearly off-peak service that the problem becomes delicate. First of all, there is to be considered the fact that increased business in public utility operation admits of economies of large-scale production to a limited extent whether the added business is peak or off-peak. Moreover, an increase in the amount of service rendered may require additional fixed investment only in some part of the entire plant. Larger generating units may be required, but perhaps in a given case the existing labor force and transmission facilities are sufficient to handle the added business. That is, additional production may contribute to the peak of one part of the system, but not entail any additional expense in other respects. The error is liable to be made of confining the off-peak problem to technical production, or generation merely, whereas intensification of service within a given area, i. e., improvement of the density factor, is also important. The distinction between peak service and off-peak service for rate purposes is apt to become a complicated matter. What is off-peak business at the time of its original assumption may develop into the peak demand later on.

Some costs are proportional to time rather than use. Other costs are traceable partly to use but also partially to time. It is scarcely correct to consider costs which accrue with the passage of time as separable or applicable to any particular quantity of product or service. Fixed capital costs, obsolescence, and some forms of maintenance are proportional to time and not to use, and therefore are incapable of being allocated as costs of rendering any particular units of service. There are some circumstances, then, in which any increase of business is a gain, as, for example, when it is impossible to attain a favorable degree of utilization by serving only one type of user. Then, if additional classes and revenue can be obtained in no other way, it is not only profitable but may be economical of resources to offer preferential rates.

The above statements, unless modified, imply too strong a case for differential charging over a wide range. It has been maintained by one writer that incomplete utilization resulting from a uniform rate policy is a temporary and abnormal situation, found only in the early developmental period of a public utility enterprise when decreasing cost, accompanied by an elastic demand, is operating strongly.[18] It is concluded by

[18] Pigou, A. C., *Economics of Welfare*, pp. 273-278.

another writer that there is no justification for differentiation unless the possibilities of decreasing cost are almost unlimited, and he considers that to be extremely unlikely.[16] Unless surplus capacity and incomplete utilization are chronic and inescapable with a simple rate structure, the use of differentiation on a broad scale cannot be justified by an appeal to cost. Public utility enterprises should not be permitted to adapt their rate policy to the coverage of excess facilities provided for in advance of need, and regulatory bodies properly have condemned this practice.[17] Present customers should not be expected to contribute revenue to support extravagant capital expenditures, even though the demand of some of them may be strong enough to make such charges possible. There is also the question whether, in such a case, new business obtained under these circumstances should be offered extremely low rates on the theory that the increment costs are slight. It may be granted that it is better that the facilities be used if there is any possibility of it; but there is danger in the policy if too short a view is taken. If an enterprise calculates its minimum rate in a differential structure solely on short-run considerations, it may invite embarrassing peaks and attract a large amount of business which is unremunerative in the longer run. The eventual result is an historical rate structure with rate relationships which cannot be justified, and yet it may not be easy later on to change the rates. Hence, a poorly planned expansion policy may provoke discriminatory excesses. A crude increment cost rate technique degenerates into the practice of soliciting low value competitive business without disturbing the rates of those who can be made to pay more. That part of the service which is sold in a monopolistic market will be burdened with most of the fixed costs and will contribute in addition whatever monopoly profit the situation may afford.

The increment cost theory, which may lead to extreme differential charging, is related to the peak responsibility theory. Both may be applied in such a way as to disregard diversity. Diversity refers to the fact that some customers use the plant at one time and some at another. Since total demand is not simultaneous, the greater the diversity, the smaller the plant necessary to handle any given amount of business, and the better the plant load factor. Because diversity results from the mutual use of the same facilities by customers at different times, the savings re-

[16] Bye, R. T., "Composite Demand and Joint Supply," *Quarterly Journal of Economics*, Vol. 44 (1929), p. 52.

[17] The commissions and courts have balked, and rightly so, when it has been proposed to make rates cover the investment in plants built far in excess of need. *San Diego Land and Town Company* v. *Jasper* (U. S. Sup. Ct.) 189 U. S. 439, 446; *Re Campbell Brothers Water Company* (Idaho) P.U.R. 1921C, 330; *Re Great Western Power Company* (Cal.) P.U.R. 1921E, 198, 208; *Re Los Altos Water Company* (Cal.) P.U.R. 1921D, 535. Cf. Ruggles, C. O., "Problems of Public Utility Rate Regulation and Fair Return," *Journal of Political Economy*, Vol. 32 (1924), p. 543; Bye, R. T., "Composite Demand and Joint Supply in Relation to Public Utility Rates," *Quarterly Journal of Economics*, Vol. 44 (1929), p. 40; and a criticism of the latter by Kobe, S., *Quarterly Journal of Economics*, Vol. 44 (1929), p. 706.

sulting therefrom cannot be said to belong to either the company or to one group of customers rather than another. If the company retains for itself the cost reductions attributable to diversity, the effect is to charge for the same facilities repeatedly, and extra profits result.[18] Or the company may distribute the result of diversity unevenly by offering low rates to attract competitive business while withholding any benefits of diversity in rates charged those whose service is rendered under monopolistic conditions. Used in this way, manipulation of the diversity concept becomes a significant factor in the discriminatory, profit-seeking policy of a public utility company.

The need for differentiation is apt to be greatest when an enterprise is young; and as utilization factors improve, the practice of rate differentiation should be more circumscribed. In order to avoid giving an erroneous impression, it is repeated that rate differentiation gets its chief justification when the issue is clearly between peak and off-peak service. To put the matter even more strongly, all attempts to practice differentiation under any other circumstances ought to be scrutinized carefully, in order to assure that the added business really does result in more complete utilization with declining costs as a result. And whatever gains may be derived from a differential policy should be reflected in lower rates to all customers; otherwise the policy results in monopoly profits from discrimination.

The fact that a public utility operates under monopoly, extending over a considerable part of its market at least, thus introduces another complicating factor into the problem of ascertaining the proper limits of differentiation in rate making. In the case of a public utility service, the portion of the total supply devoted to each class of demand is within the control of the seller, by virtue of the fact that the monopolistic operator, subject to some regulatory control, determines the rates which are offered to each class of customers. Kilowatt-hours of electricity are alike, whether sold to a factory or a housewife; and while it is not possible for the manager of a central station or a gas enterprise to sell all of his service to any one class, assuming a high degree of utilization of investment, he does have extensive control over the rationing of the total output. Unless restricted, the public utility operator will apportion his total supply among the various users through rate policy so as to realize for himself the greatest net profit. The way is opened for discrimination between uses and users on a grand scale. There is then the possibility that inferior uses will be satisfied while those of greater social importance will either not be recognized at all or will be served only at higher rates.

[18] Nevertheless the benefit of diversity sometimes is openly claimed as a "right" of the public utility company. See Ferguson, L. A., "Effect of Maximum Demand on Rate Making," included in a monograph entitled *The Development of Scientific Rates for Electricity Supply*, The Edison Illuminating Company of Detroit, 1915, pp. 117, 125.

A nice question is raised when it is sought to determine whether a differential rate policy, aside from differences in the cost of service, in any given case is attributable to the economic desirability of full utilization or to the power of a monopolist seeking to extract from the market all the profit it will yield. It is the existence of monopoly which provides the power to charge on a traffic-will-bear basis. Monopoly may be in itself a sufficient cause of discrimination, and if monopoly is unregulated or imperfectly controlled it is to be expected that the aim to obtain monopoly profits will outweigh desire for complete utilization as the reason for rate discrimination between consumers.[19]

Some writers have judged the propriety of differentiated rates by the test of whether or not differentiation could occur under competitive conditions. The assumption is that what would happen under competition is what ought to be.[20] The present writer is unable to see why the fact that differentiation would be impossible under a regime of perfect competition is proof of the unfairness of such differentiation under monopoly. When competition has been rejected as undesirable and monopoly accepted in its place, why should rates under an assumed competitive regime be a test of fair rates? The question of whether or not the differentiation promotes more complete utilization and therefore leads to lower unit cost is the relevant criterion. To show that the differentiation could not occur under competition may prove only from another angle that competition in public utility operation is undesirable, because it is wasteful of resources that might be exploited economically.

It may be consistent with the public interest in some circumstances to differentiate for the purpose of achieving lower unit costs through larger volume and more intensive utilization of investment. If there is incomplete use of facilities, prudently built, and more complete utilization can be brought about by accepting additional business at lower rates, according to the traffic-will-bear policy, the practice is not necessarily to be condemned. The following reservations are fundamental, however. First, such rate concessions should be made only when the added business improves the utilization factors, thereby resulting in lower unit costs. Second, preferential rates should be offered only when that is necessary to get the business. Third, no business ever should be accepted at less than long-time increment cost. Fourth, the consumers who pay the higher rates should benefit from the lower average unit cost of production which results from the better utilization attendant upon the addition of the business which pays lower rates. Fifth, uneconomical competition be-

[19] Cf. Watkins, G. P., *Electrical Rates*, p. 197; Haney, L. H., "Joint Costs with Especial Regard to Railways," *Quarterly Journal of Economics*, Vol. 30 (1915-1916), pp. 233, 249.

[20] Pigou, A. C., "Railway Rates and Joint Costs," *Quarterly Journal of Economics*, Vol. 27 (1912-1913), p. 535; Bye, R. T., "Composite Demand and Joint Supply," *Quarterly Journal of Economics*, Vol. 44 (1929), p. 40.

tween substitute goods and services, which arises when each of the respective sellers assumes that the whole market belongs to him must be prevented. In other words, rate differentiation should not be a device to enhance monopoly profit by discrimination, but should reduce rates all along the line and promote maximum service with economical use of resources.

Above all, the public utility monopolist cannot be allowed a free hand in determining rate differentiation policies. It is not enough for regulatory bodies to enforce a balance between total costs and total income. The rate relationship among the consumers must be controlled also. Detailed and accurate costing is therefore an indispensable requisite to the proper restriction of rate differentiation.

The mere analysis of past costs, i. e., ordinary cost accounting, will not suffice, for the cost of service itself depends on the volume of service rendered. Moreover, differentiation can scarcely be controlled effectively unless the controlling bodies ascertain to what extent the recipients of special inducement rates must be favored in order to prevail on them to take the service. As a practical example, the commissions might very well not only investigate whether large power customers are being favored in rates, but also determine the need for the preferential treatment in charges levied. It is an interesting question whether large power users must be served on an increment-cost basis, or whether an efficient central station can charge them full rates, including average share of legitimate overhead costs, and still get the business in competition with isolated plants and alternative sources of energy.

This is a large order for regulation, and it presumes a powerful, energetic agency of control. A differential policy can be condoned to the extent that it results in the development of maximum service through the effect of an increasing volume of service in bringing about decreasing unit costs. The latter condition should be examined more thoroughly. Moreover, volume alone is not the only consideration, nor even the most important one. In terms of social policy, the allocation of the supply through rates is the important matter. With the aforementioned standards in mind, the remainder of this chapter is concerned with an appraisal of rate practices and with regulatory control of public utility rates.

Public Utility Rate Policies

It is only within recent years that the public utilities have given any great amount of attention to rate making. Concentration on the development of production technique and the reduction of cost was long an outstanding characteristic of the local utilities.[21] Realization of the necessity

[21]Baylor, A. K., "New Uses for Power in Industry," *Public Service Management*, Vol. 44 (1928), p. 135.

for intensive development of the market has resulted in an increased interest in the formation of rates designed to encourage greater use. Flat rates which penalize the small user, and straight-line meter rates which are burdensome to large users, are now considered obsolete and have been all but eliminated in the electric industry.[22] The step rate and the block rate gave way to the so-called "scientific" rates. The term "scientific" is usually applied to the type of rate which aims to collect from each consumer the fixed cost of serving him as a separate charge apart from the energy or output charge which varies with the amount of the service used. As a matter of fact, the scientific rate is not so much a type or form of rate as it is the expression of a rate-making principle which aims ostensibly at least, to allocate to each customer his share of cost regardless of how much service actually is taken.[23] It is beyond the scope of this study to discuss the many types of rates used by the public utilities. The interest is in their purposes, not their specific form.

Two-part and three-part rates have made greatest progress in connection with electrical service. The forms of rate which separate customer, demand, and energy charges meet a serious handicap in their application to the domestic branch of the service in that they are difficult to administer cheaply. Also, they are apt to confuse and antagonize the consumers by their complexity. The heterogeneity of rate forms and schedules is also a real handicap to regulation. But, on the other hand, there is equal danger in sudden changes in rates, apt as they are to result in instability and public misunderstanding. The gas industry followed the lead of the electrical utilities in the development of "scientific" rates.[24]

Scientific rates have not become general in the telephone industry. In this case, practical difficulties in measurement have been a deterring factor. The National Association of Railroad and Utilities Commissioners favors the adoption of two-part telephone rates.[25] Much the same condition is found in the local transportation industry. The weight of tradition and the difficulty in finding a practicable form of ready-to-serve charge have been stumbling blocks in rate development. Zone rates, weekly passes, and the nickel permit, while successful in some cases, are scarcely beyond the experimental stage. In the local transportation industry, it is quite apparent that rate experimentation has been concerned chiefly with devising means to meet competition rather than to provide rates which measure cost of service. It is interesting to notice, however,

[22] Glaeser, M. G., *op. cit.* p. 668; *Electrical World*, Vol. 95 (1930), p. 1336; Ryan, Paul, "Trend of Gas Rate Structures," *American Gas Association Monthly*, Vol. 12 (1930), p. 355.

[23] It is perhaps unnecessary to state that there are limits to the practicability of minute cost analysis. An approximation to actual costs is, perhaps, all that can be expected from any rate in practice. But it is this very question of how far it is possible and feasible to go in cost allocation which is one of the grounds for controversy concerning rate technique.

[24] American Gas Association, *Trend of Gas Rate Structures in the United States, 1925-1930*; National Electric Light Association, *Rate Book, 1930*.

[25] *Proceedings of the National Association of Railroad and Utilities Commissioners*, 1930, p. 85.

that the two go hand in hand in some cases, as for example in the case of the short-haul passenger traffic where a relatively low rate is demanded both from the standpoint of cost and by the desire to meet competition from substitute means of transportation.[26]

The significance of the scientific rate, from the viewpoint of this study, is that while its theoretical purpose is to attain the cost of service ideal, the scientific rate forms lend themselves to competitive rate making in practice. The promotional rate aims to attract the elastic demand with a low charge, and the purpose can be achieved by charging off the greater part of the fixed costs against the initial and at the same time most necessitous service, following with a low energy charge to appeal to the elastic demand for which there are substitutes. Obviously, there is danger that the user of a minimum amount of service may be overcharged, and no doubt it is this belief that has contributed to the unpopularity with small consumers of customer, minimum, and demand charges. A scientific two-part or three-part rate form may, then, be used either as a refined attempt to realize cost charging or as a scheme to appeal to the classes of demand for which there are substitutes, with the possibility of a penalty on small users and others who have no satisfactory alternative.

Because of their complexity and because the real motive governing their use has come to be understood, "scientific" rates for domestic electric service became very unpopular. Consequently, the expression has not been prominent in discussions about electric rates of late. In many localities, they have been supplanted by the simpler block rate, which is now the most widely used domestic rate form.[27] It is clear that this device too is used as a means to charge according to what the traffic will bear, since the breaks in rate follow closely the purposes for which the service is used. That is, rates are lowered when necessary to meet competition from substitutes and to encourage the use of electricity for refrigeration, cooking, and other uses where consumption is heavy. Forms may change when the motives underlying them do not. There has been some progress toward rate simplicity, greater uniformity, and less disparity between classes; but there is need for continued effort in these directions. Diverse rate forms are still in use for domestic service, and considerable disparity in the level of rates persists.[28] In commercial and industrial service, where competitive factors have been given the greatest emphasis, there is a high degree of complexity in rates.[29]

The public utility companies defend promotional rate forms by dem-

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[26] *Proceedings of the National Association of Railroad and Utilities Commissioners*, 1930, p. 25; Hunter, J. G. (Transportation Engineer, California Railroad Commission), *Effect of Fare Changes on Street Railway Operations in California*, 1929, p. 13.

[27] Federal Power Commission, Electric Rate Survey, Rate Series No. 7, *Electric Rate Uniformity*, 1936, p. 17.

[28] *Ibid.*

[29] *Ibid.*, Rate Series No. 4, *Rates for Electric Service to Commercial and Industrial Customers*, 1936.

onstrating that there is a good deal of business which can be obtained only by offering some rate concession. It is contended that new uses, especially, must be encouraged until a demand has been developed which is capable of bearing a full share of average unit costs. From this point of view, the "cost allocation complex" is considered an obstacle to development of business and an invasion of the domain of managerial judgment and business expediency.[30] It is contended that the acceptance of the competitive and elastic business at lower rates accelerates the operation of the law of decreasing costs to the end that average unit costs are decreased and all consumers benefited.

There is no intent to denounce the promotional rate, for it is defensible when used properly. But is is necessary to direct attention to the fact that the promotional rate principle in public utility operation lends itself easily to misuse as a selective instrument with which to promote some types of service and neglect others, with profit as the motive. The promotional rate does create the contingency that luxury uses and uses for which there is available an adequate substitute service will be favored at the expense of the other classes of demand. The danger is that promotional rate schemes may conceal the most reprehensible forms of use classification, combined billing, and quantity discounts, with little or no regard for cost or for the avoidance of unfair discrimination.[31] A promotional rate applied to a particular use, moreover, always carries with it the possibility that so much business may be attracted that an undesirable peak business will be the eventual result.[32] The promotional rate also enables the public utility to charge a high price for the minimum amount of service which is considered a necessity while making the follow-on charge unduly low in an effort to capture the elusive demand that is subject to competitive conditions. Thus, there can be an element of coercion in applying high rates to initial necessitous uses unless sufficient additional service is taken to make the average rate paid per unit of total consumption relatively low.

It has been cited previously[33] that the expense of installing equipment necessary to the use of gas or electric service contributes to a rigidity of demand, once the consumer has committed himself to public utility service, and introduces the dangers of excessive promotion. Hence, there is an opportunity to reduce rates below cost for a time, and possibly to sell appliances on the same basis until a sizable load has been built up,

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[30]Purcell, T. V., "Special and Off-Peak Rates," *Gas Age-Record*, Vol. 62 (1928), p. 587; Cabot, Philip, "Competition and Rate Making," *Electric Railway Journal*, Vol. 73 (1929), p. 988.

[31]Glaeser, M. G., *op. cit.*, p. 666; New York Report, 1930, p. 119; Nash, L. R., "Electric Tariffs in the United States and the Proper Relation Between Industrial, Commercial, and Domestic Rates," *Transactions of the World Power Conference*, Vol. 15, pp. 87, 99; Nichols, Ellsworth, *Public Utility Service and Discrimination*, pp. 967-971; *Moritz v. Edison Electric Illuminating Company* (N. Y.) P.U.R. 1917A, 365; *Re Edison Electric Illuminating Company* (Mass.) P.U.R. 1920D, 1.

[32]Nutting, H. G. D., "The Electric Water Heater," *N. E. L. A. Bulletin*, Vol. 16 (1929), p. 641.

[33]Chap. III and Chap. VI.

than to raise the rates to take advantage of the inelasticity of the demand which the expensive investment causes. Extremely low rates offered as part of a competitive campaign sometimes have encouraged consumers to invest heavily in costly appliances. Upon the cessation of the rate conflict, the public utility, in seeking to raise its tariffs to a more normal level, has encountered spirited opposition from those customers who committed themselves to a service which they could not afford at a higher rate.[84] Under these circumstances, it becomes quite apparent that consumer demand is much more elastic for a rate decrease than it is for a rate increase.

It is a recognized fact that an addition to the domestic business of an electric utility can, within broad limits, be considered permanent.[85] Schemes for complete electrification of the home under a contract plan, whereby the customer is given a term of years to pay the company for the appliances, ought not to be permitted unless there is assurance that the consumer is going to receive ample rate protection in the future. In some cases, the state commissions have denied rate increases, otherwise justifiable, in view of the fact that consumers had gone to great expense to install public utility service upon the vigorous solicitation of the company.[86]

It has been claimed for the public utilities that, since decreasing cost and elastic demand characterize their operations to a considerable degree, their own interests will prompt them to adopt a long-time view, to forego present monopoly profits, and to reduce rates in order that a large volume of business may result.[87] The public utility operators are wont to point with pride to the continuous reduction in rates over a period of years.[88] It should be observed, on this point, that the downward trend of rates is not an anomaly nor the basis for unqualified praise, but is to be expected in a young industry characterized by extreme technical improvements and by substantial economies from large-scale production under the protection of monopoly. In other cases, the automobile and the radio have followed similar price trends with improved production methods and quantity output.

It is not proved that a commitment to general rate reductions instead of the selective devices which have been used so widely would have failed to bring the same quantitative results with sounder load building and

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[84] *Re Bowdoin Utilities Company* (Mont.) P.U.R. 1931B, 20.

[85] "There is very little fluctuation in domestic use of our service. Household habits become fixed. A household accustomed to the convenience and value of electricity will curtail its use only under the direst necessity. When we add to the domestic load, therefore, we put on what amounts to a permanent increase in business." Sloan, M. S., "Sales Increase or Rate Increase," *N. E. L. A. Bulletin*, Vol. 16 (1929), p. 353.

[86] *Re Idaho Power Company* (Idaho) P.U.R. 1920F, 950; *Re Napa Valley Electric Company* (Cal.) P.U.R. 1925A, 724; *Re Truckee River Power Company* (Nev.) P.U.R. 1927C, 692; *Public Works* ex rel. *Patrons* v. *Washington Water Power Company* (Wash.) P.U.R. 1928A, 127.

[87] Robb, Russell, "Monopoly Price and Public Utilities," *Stone and Webster Journal*, Vol. 37 (1925), p. 421.

[88] Jones, W. A., "The Future of the Electrical Industry," *N. E. L. A. Bulletin*, Vol. 17 (1930), p. 413.

greater justice. The electric utilities have persistently held to the policy of waiting for increased consumption to "justify" rate reductions or have decreased rates on a selective basis where the opportunities for quick profits appeared to be favorable.[39] They have adopted a cautious attitude in the main, thus avoiding the risks of general reductions while protecting past investment and financial structures premised on profit expectancies. The objective rate, one of the newest rate forms to come into widespread use, is of this nature, since the application of a decreased rate depends upon evidence of increased consumption first.

But while not too much credence can be granted to the claim that the public utilities have made voluntary rate reductions, it should not be asserted, on the other hand, that commission influence has been wholly responsible for all rate decreases. During recent years, especially, there have been numerous instances where public utilities have lowered rates on their own initiative.[40] Pressure resulting from governmental investigations of financial abuses and the increased threat of public operation have accelerated the trend of rate reductions for electric service, particularly to domestic consumers.[41] Regardless of that, there is reason to believe that the public utilities have not reduced rates to the greatest extent consistent with a complete coverage of legitimate costs. Not very many of the public utilities have pushed the maximum development idea to its extreme limit by general rate reductions.[42] It does not seem unreasonable to assume that most monopolists will lean in the direction of rate maintenance and service restriction where that policy will yield generous profit.[43] The policy of the private public utilities in the United States has been predominantly that of price maintenance and cost reduction.[44] This view of the matter harmonizes with the fact that the utility companies have in the past devoted their principal attention to

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[39]Ferguson, S., "Do Rate Reductions 'per se' Increase Use of Service?" *Public Utilities Fortnightly*, Vol. 18, No. 2 (July 16, 1936), p. 63; Vincent, W. G., and others, "Will Electric Rates Keep Going Down Indefinitely?" *Report of Annual Convention of the Edison Electric Institute*, 1936.

[40]"The most striking trend in rates during the past year has been the voluntary reduction of rates for gas and electric current." "Report of the Committee on Public Utility Rates," *Proceedings of the National Association of Railroad and Utility Commissioners*, 1928, p. 428.

[41]Federal Power Commission, *Trends in Residential Rates from 1924 to 1936*, p. 23. A second nation-wide survey of electric rates by the Federal Power Commission reveals that rate reductions continue to be general in most parts of the country. Federal Power Commission, Bureau of Engineering, 1937 Rate Series B, a series of 48 state reports.

[42]Gilchrist, J. F., "Commercial Development Between Now and 1930," *N. E. L. A. Bulletin*, Vol. 13 (1926), p. 97. "There are, I venture to say, at least two schools of thought in every utility today. One group believes that the acquiring of business should be pushed ahead vigorously; the other is content to let it come with the self-asserted demand of the people, saving the cost of publicity and sales."

[43]"Generally speaking, large business combinations prefer to lean toward as small a volume as possible, in so far as that is not inconsistent with the maximum net gain for the industry. Enormous production at lowest possible prices is not sought after so much as limited production at prices high enough to yield liberal net profits. . . . To the extent that this policy is in vogue, it brings a private net gain at the expense of a net social loss. It is scientific restriction of production which yields maximum business profits but which furnishes society with too few goods at too high prices. Hence, to charge what the traffic will bear is a policy which is capable of bringing the social good or harm, according as it is applied." Edie, L. D., *Economics: Principles and Problems*, p. 187. Cf. Hadley, A. T., *Economics*, p. 159.

[44]Peck, H. W., "An Inductive Study of Publicly Owned and Operated vs. Privately Owned but Regulated Electric Utilities," *American Economic Review Supplement*, Vol. 19 (1929), p. 197.

improvements in operating technique and not to aggressive merchandising. Furthermore, where there have been noticeable rate reductions, the decreases have usually been applied to those classes of service where there is competition to be met, notably to the large users of service who can avail themselves of a satisfactory alternative. This conviction has provoked the complaint that the small consumer is exploited.

It would be no great exaggeration to say that it is the domestic, or at least the small, consumer who creates the public utility rate problem. If the private companies are permitted a free hand, the small consumer who has no adequate alternative service available will be charged high, monopolistic rates while the large users are served at competitive rates.

A number of recent studies concerned with the disparity in electric rates applicable to different groups create a strong presumption that competitive and monopolistic factors are given great weight in rate making.[45] Quantity of service taken decreases the unit cost of serving, but it is extremely unlikely that the spread in revenue received per kilowatt-hour from the non-competitive as distinguished from the competitive classes is explainable entirely on the basis of differential costs of service.

The domestic consumers and the other small users bear, apparently, the burden of most of the unallocable costs and contribute most of the profits. Gauged by the standards stated previously, the conclusion is that this method of charging may be justified if it imposes no added burden on small consumers and if rate concessions must be made in order that large customers may be attracted. But these are important conditions, and in view of existing rate practices, it is not at all certain that the maxim has been kept within proper bounds. The plea of the utilities that it is better for the small users to be linked up with the large users, if the latter bear any part of the fixed costs, than to have industrial consumers get their energy from some other source is not necessarily opposed to sound pricing policy. Nevertheless, it is doubtful whether small consumers actually have benefited greatly in being served from the same supply system as the large power users. The danger is that a differential policy may be extended into unfair discrimination and employed primarily as a device to increase profits.

The statement of public utility interests that the domestic consumers are not being exploited, but that, to the contrary, the majority of them are carried at a loss, is to be viewed askance.[46] To the extent that the

[45] Federal Power Commission, *Electric Rate Survey*, 1936; Power Authority of the State of New York, *Report on Cost of Distribution of Electricity*, 1934.

[46] Ferguson, Samuel, "Promotional Domestic Rates," *National Electric Light Association Bulletin*, Vol. 16 (1929), p. 409; *Proceedings of the American Gas Association*, 1926, p. 86. Closely allied to the question of whether every class is paying its share of cost is the proposal to base public utility rates, particularly for electric light and power, on ability to pay. Simply, some consumers would be taxed and others subsidized through public utility rates. It is claimed by some that this is the practice now in Ontario, where light and power are furnished by a league of municipalities. Ability-to-pay rates, as distinguished from competitive rates in this

latter is true, the explanation is that rates have been too high to permit a majority of domestic users to make sufficient use of service to result in the attainment of high individual utilization factors. That a part of the domestic demand for electricity or gas is elastic and will respond to inducement rates to a marked degree is not a theoretical conjecture, but a demonstrated proposition. It is not clear, however, that this can be translated into protection for small consumers when "scientific" rates are formulated so as to segregate carefully the competitive, elastic business from the non-competitive, inelastic business. Moreover, the argument for protection by competition falls down in the face of the fact that many public utility enterprises have not in their rate policies made a zealous effort to develop the elastic market to the point of greatest intensity.[47] Investigations that have been made, including comparisons with Canadian rates and with municipal rates in this country, although they are not absolutely conclusive, do give some support to the contention that the rate policy of the private utilities has been to exact from the consumers who have no alternative all that they can be made to pay.[48]

Especially is this likely to be true in view of the spurious costs which have often been introduced into the records by public utility companies. It may be difficult to determine what cost really is when cost representations are made which are intended to conceal the capitalization of profits expected to be derived from monopolistic exploitation of the market.[49] If it is granted that a public utility is entitled to charge rates which will cover its costs, including a reasonable return on investment, it must be assumed that book values which purport to be costs for this purpose should be held down to what is necessary for the performance of the public utility function in the public interest.

To make the issue clear, it should be mentioned that in the most accurate sense rates are not excessive because costs are inflated. The inflation tactics, however, do seem to justify, and if successful they legalize under the fair value doctrine, rates which yield monopolistic gains. Nevertheless, it is the monopolistic elements in the market which make it possible to levy charges which produce excess profits. Padded costs merely serve to conceal the monopolistic harvest, and only those services

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case, made little headway in this country until the federal government entered the field in the T.V.A. and R.E.A. The public utility operators would not be particularly enthusiastic about methods of charging which aim to promote maximum social benefits, involving, in all probability, some modification of a pricing policy the primary concern of which is profit.

[47] Mosher, W. E., and others, *op. cit.*, pp. 261-266.

[48] Peck, H. W., "An Inductive Study of Privately Owned and Operated vs. Privately Owned But Regulated Electric Utilities," *American Economic Review Supplement*, Vol. 19 (1929), p. 197; Gaby, F. A., "Economic Aspects of Electrical Supply in the House and on the Farm," *Transactions of the World Power Conference, 1930*, Vol. 1, p. 3; New York Report (Minority report), 1930, p. 284; U. S. Department of Commerce, *Census of Electrical Industries: Central Electric Light and Power Stations, 1927*, Table 55, p. 74; Mosher, W. E., and others, *op. cit.*, pp. 221-267.

[49] Some of the devices used for this purpose are referred to in Chap. III.

which are rendered under monopolistic conditions can be made to bear fictitious costs; really competitive business cannot be imposed on by such devices. But by skillful allocation of padded costs, and of legitimate fixed costs as well, to the non-competitive parts of the market, rates can be constructed which yield monopolistic profits. In addition, greater scope is afforded for the attraction of more competitive business by means of rate concessions when a public utility operates in a market that is a mixture of competition and monopoly.

Strict devotion to past costs and capitalized expectancies in rate formation is likely to result in a standpat protective rate policy. If rates are high as a consequence, volume of service is restricted and unit costs, alleged or real, will be correspondingly higher. A more progressive approach would be to gauge unit cost as closely as possible on the assumption of a fully developed output and to establish rates to attract a market for that potential output. Rates and cost would tend to move together as volume increased and unit cost declined; and rates would to a considerable extent determine unit cost rather than the reverse. An enterprise interested primarily in quick profits and in the protection of financial structures erected largely on profit estimations will be wary of assuming the risks of such a farsighted policy.

Regulatory Policy and Procedure in Rate Making

It has been noted that public utility rates, with special reference to gas and electric charges, have been formulated with competitive and monopolistic factors chiefly in mind. It follows that such a method of rate making bears the tacit if not expressed approval of the regulatory commissions. While it has been commonly supposed that the state commissions have upheld the theory of cost rates, and while the regulators have rendered lip service to the cost-of-service ideal, a study of commission rate cases discloses that in practice the regulatory bodies have been disposed to permit rate making on a competitive basis to a marked degree. Critics[50] of the rate policies followed in public utility industries must be credited with an accurate diagnosis of existing practices when they state that competition by substitution is a major factor in rate-making practice now; but it is quite another matter to grant that competitive factors should govern rate making.

There are almost countless cases wherein the commissions have given determining influence to the plea that sound rate making will result in the maximum development of the business consistent with full recovery

[50]Cabot, Philip, "Public Utility Rate Regulation," *Harvard Business Review*, Vol. 7 (1929), pp. 257, 261; Bauer, John, "Cost v. Value of Service in Rate Making," *Electrical World*, Vol. 72 (1918), pp. 388, 443.

of costs, the property taken as a unit.[51] The proposition is stated in a variety of ways, but in them all there is the implication that cost rate making is not to be adhered to so closely as to forbid the encouragement of business which demands an increment-cost-plus rate because of competitive conditions. The commissions have wavered between the two considerations that rates should be limited to cost and that the desirability of maximum use and the economic utilization of productive facilities compels some allowance for differentiation in rates in accordance with "value of service" or "what the traffic will bear." In their indecision, they have been disposed to let matters take their course, allowing rates to stand which were not patently discriminatory, while concentrating on "valuation." It is only just to state, however, that the commissions have opposed the most flagrant types of discrimination, for example, where individual rates are proposed which are not open to all who use service under essentially similar conditions.

Several sets of circumstances contribute to the failure of the commissions to govern closely the particular rates of the utility companies. Foremost of these is the almost exclusive attention that has been given to the regulation of the rate of return on the fair value of the property. The perplexities of the latter problem have placed in almost total eclipse the question as to whether the total revenue is contributed in a manner that is equitable to each of the various classes of consumers.

Failure to apply themselves thoroughly to the problem has resulted in a superficial use of terms such as "value of service" and "competitive conditions." In too many cases the commissions have been content to pronounce that the "value of service" must be considered in the determination of reasonable rates in such a way as to suggest that "value of service" is something definite and specific. There seemingly has been a failure to comprehend that the phrase "value of service" is meaningful only when it is used in connection with an individual, or at least a small homogeneous class, and when it is modified by some reference to quantity of service. The value of domestic electric service to any individual cannot be determined even approximately unless it is stated whether ten or a hundred kilowatt-hours per month are under discussion. Any rate that may be charged measures the value of the amount of service that actually

[51] *Re New York Telephone Company* (N. Y.) P.U.R. 1923B, 545; *Re Menasha Municipal Water Department* (Wis.) P.U.R. 1929A, 1; *Re Alabama Power Company* (Ala.) P.U.R. 1925C, 840; *Re Duluth Street Railway Company* (Wis.) P.U.R. 1928B, 235; *Re Midland Counties Public Service Corporation* (Cal.) P.U.R. 1924D, 535; *Re Great Western Power Company* (Cal.) P.U.R. 1923C, 545; *Re San Francisco-Oakland Terminal Railways* (Cal.) P.U.R. 1920A, 127; *Orange v. Athol Gas & Electric Company* (Mass.) P.U.R. 1920C, 1033; *Re Wisconsin Traction L. H. & P. Company* (Wis.) P.U.R. 1919B, 224; *Devils Lake Steam Laundry v. Otter Tail Power Company* (N. D.) P.U.R. 1928C, 87; *Re Water Commission of Wausau* (Wis.) P.U.R. 1928D, 820; *Re Fort Worth Gas Company* (Tex.) P.U.R. 1929A, 136; *Re Public Service Electric and Gas Company* (N. J.) P.U.R. 1929E, 24; *Re California-Oregon Power Company* (Ore.) P.U.R. 1917F, 740; *Re Plymouth Electric Light Company* (N. H.) P.U.R. 1917F, 741; *Redmon v. East St. Louis L. & P. Company* (Ill.) P.U.R. 1917C, 954; *Re Kansas City Electric Light Company* (Mo.) P.U.R. 1917C; 728; *Re Los Angeles G. & E. Corp.* (Cal.) P.U.R. 1917F, 717.

is taken at that rate. The New York commission recognized this difficulty with reference to telephone rates when it said:

> In making rates, consideration must be given to both cost of the service and its value to the individual subscriber. As a measure of fair rates, value of service alone is an elusive standard and not satisfactory as a yardstick, since each individual measures the value of the service to himself based on, primarily, the amount which he can afford to pay . . . . and when rates go beyond the maximum which he thus fixes as the value to him . . . . he ceases to use that service.[52]

The "value of service" has, in turn, been identified with or measured by elasticity of demand, the quality of the service, the cost and quality of an alternative service, ability to pay, comparison with rates for similar service in other localities, the judgment of the commission, and the extent of service development.[53] Of the various meanings given to the phrase, however, the association of the substitute service idea has been most frequent. It is no exaggeration to say that the value-of-service concept has been used as a thinly veiled monopolistic device.

The unavailability of accurate cost data, the complexity and heterogeneity of rates and rate schedules in use, and supposed limits to the power of a commission to infringe upon management prerogative in rate making impose additional obstacles to effective rate control aiming at equity among the several classes of consumers. From the Wisconsin commission has come an intelligent comment on the relationship between management and regulation. After reviewing the efforts of the Milwaukee Electric Railway and Light Company to maintain its earnings in the face of difficulties, the commission observed:

> That a Commission is not the manager of the utilities subject to its regulatory jurisdiction and that it may not substitute its judgment for that of owners and managers is a frequently stated proposition of public utility law. . . . . And yet anyone with the least familiarity with regulation knows that Commissions constantly substitute their judgment for that of the managers and owners, with the assent of the courts. . . . Where company policies and practices do not touch any considerable public interest—as, for example, how the duties of the various departments are to be distributed—there can be no doubt that the principle of noninterference with management is sound. But where the public has an immediate and substantial stake in any managerial determination, it is inevitable and imperative that this Commission review, weigh, and if need be in rare cases, veto the judgment of the managers. Any other conclusion renders regulation nugatory and useless.[54]

It is true that in most of the states the commissions do not have the right to initiate rate investigations or to set rates; their obligation is to

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[52] *Re New York Telephone Company* (N. Y.) P.U.R. 1930C, 367. Cf. Hale, R. L. *Valuation and Rate Making*, p. 16, n. 1. Reprinted in Smith, Y. B., and Dowling, N. T., *Cases on the Law of Public Utilities*, p. 1153; *Re Arkansas Light & Power Company* (Ark.) P.U.R. 1920D, 775.

[53] *Re Colorado Springs L. H. & P. Company* (Colo.) P.U.R. 1918F, 707; *Re Union Telephone Company* (N. H.) P.U.R. 1921C, 598; *Re Idaho Power Company* (Idaho) P.U.R. 1924C, 731; *Re New Jersey Gas Company* (N. J.) P.U.R. 1918B, 438; *Re Dixon Home Telephone Company* (Ill.) P.U.R. 1918 F, 706; *Re Kent Water & Light Company* (Ohio) P.U.R. 1917D, 394; *West v. United Rys. & Electric Company* (Md.) P.U.R. 1928D, 163; Glaeser, M. G., *op. cit.*, p. 335.

[54] *Re Milwaukee Electric Railway and Light Company* (Wis.) P.U.R. 1931E, 289.

approve or disapprove proffered schedules.[55] Commission emphasis on the necessity for avoiding infringement on managerial powers may be, however, in some cases, directly proportional to the commission's inertia. The same suspicion is aroused when commission cases call attention to the fact that rate making is not an exact science,[56] and that as a consequence there is always opportunity for the "judgment of the owners in the business affairs of the utility."[57] That there is always room for managerial judgment in any business is not disputed; but judgment based on necessary costs and ideals of public service is one thing—devoted to the goal of private profit it is quite another.

The perfunctory nature of commission procedure in rate regulation is best demonstrated by reference to the method by which rates for industrial consumption of power are formulated. By law, all customers of a public utility company are to be charged in accordance with the published schedule of rates filed with the commission and bearing the approval of that body. Moreover, all customers served under like conditions are to be classed together and offered the same rate. In practice, power rates for large consumers are fixed by individual bargaining, of which there is no record for public inspection and concerning which there has been no specific commission investigation.[58] There does not appear to be any doubt concerning the jurisdiction of the public service commissions to regulate such contracts in most of the states.[59] Where power

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[55]Bonbright & Company, Inc., *A Survey of State Laws on Public Utility Commission Regulation in the United States* (2d ed.), 1930, pp. 14-15; Nash, L. R., "Electric Tariffs in the United States and the Proper Relation Between Industrial, Commercial, and Domestic Rates," *Transactions of the World Power Conference, 1930*, Vol. 15, pp. 87, 104.

[56]*Re Pacific T. & T. Company* (Cal.) P.U.R. 1930C, 515; *Re Boston & W. St. Ry. Company* (Mass.) P.U.R. 1917F, 833; *Re Alabama Power Company* (Ala.) P.U.R. 1925C, 840.

[57]*General Necessities Corporation* v. *Detroit Edison Company* (Mich.) P.U.R. 1923E, 845; *Norwood C. & S. Rate Case* (Mass.) P.U.R. 1917D, 934. "In our opinion, we ought not, except in unusual circumstances to undertake to establish the entire rate structure of a company. This is a matter that falls largely within the field of management, and unless the competitive rates are such as to impose a burden upon customers paying under the non-competitive rates, or result in unreasonable discrimination, we feel that the establishment of these rates should generally be left to the discretion of the company." *Re Edison Electric Illuminating Company* (Mass.) P.U.R. 1928D, 859.

[58]"I regret that we have no information whatever on the subject of 'contract power rates with large industries.' These are not published in any rate book nor do the various state commissions require their filing. As each one is usually made by the method of individual bargaining, we are quite at a loss to give you any idea on the subject." Letter received from Carpenter, W. M., Economist for the N. E. L. A., December 20, 1930.

" . . . . there are today in the State of New York, many special contracts actually in force of which other customers of the utility are unaware and of which no knowledge can be obtained by an examination of the schedules on file in the offices of the Public Service Commission and of the companies. This is, in my opinion, a direct violation not only of the spirit of the Public Service Commission Law but of its letter." Maltbie, Milo R., "Rate Making" (Excerpt from a pamphlet representing an address delivered at the Annual Convention of the Empire State Gas & Electric Association, Saranac Inn, September 18, 1930). See also Senate Document 8847, Introduction, p. XVIII.

[59]*Law* v. *Railroad Commission* (Cal. Sup. Ct.) P.U.R. 1921C, 156, 195 Pac. 423; *Collingswood Sewerage Company* v. *Collingswood* (N. J. Sup. Ct.) P.U.R. 1919B, 585. "We do not know that it has ever been suggested that such a contract was not subject to legislative control. To hold that such a contract could tie the hands of the legislature would be to establish diversity in rates. Consumers by favor or by skill in bargaining might obtain advantageous rates, and would thwart the establishment of uniform rates, to which so much of our legislation has been directed. The government has never granted this governmental power to private citizens; and, in the absence of such a grant, no contract can diminish the government's right of control." Cf. *Big West Oil Company* v. *Northern Gas Company* (Mont.) P.U.R. 1928D, 705; *Re Link Belt Company* (Ind.) P.U.R. 1922C, 391.

The state of South Carolina takes the following rather surprising position in the matter

agreements are unsupervised, it is plainly a case of evasion of the law on the part of the public utility and a failure to perform its duty on the part of the commission.

The lack of interference with power contracts by the regulators is explained, very likely, by the belief that such users are fully capable of protecting themselves. Perhaps the complexity of such rates has also been a factor in commission avoidance. No doubt most of the large users can guard their own interests fairly well, but the commission should be concerned to the extent, at least, of making certain that low contract rates do not impose an added burden on the small consumers, and that the smaller power users who cannot avail themselves of the substitute service threat are not discriminated against in favor of more powerful competitors who are in a position to bargain more effectively.

There is some evidence that commissions are awakening to their responsibility to examine private power agreements. The Wisconsin Commission asserts that there has been "no particular difficulty with such contracts in this state."[60] The New York state commission in 1930 ordered every electric corporation to file with the commission a list (with the terms) of all contracts which "differ in any respect from the forms of contracts included in the regular schedules of such corporation which have been filed with the Commission."[61] The action of the New York Commission is particularly encouraging because private contracts have been unusually plentiful in that state; yet within six weeks practically all of the electric companies had complied with the order.[62] Chairman Maltbie, speaking for the members of the New York commission, observed in forceful language that "if a few contracts can legally be made modifying the terms or conditions of published schedules, any number can be made; if one consumer may have a special contract, all may have special con-

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of contract rates: "That nothing in this act shall authorize the Railroad Commission to declare any rate, toll, charge, or fare, contained in any contract heretofore voluntarily entered into for a term of years by and between any public utility and any person, firm or corporation for the sale and purchase of gas, electricity or other commodity the subject of said contract, to be unreasonable, and non-compensatory, without the consent of both parties to said contract, said rates, tolls, charges and fares are hereby declared, for the life of said contracts, to be reasonable and compensatory within the meaning of this act." South Carolina Law, Act of March 24, 1922, Section 3. See *Swift & Company* v. *Columbia Ry., G. & E. Company* (U. S. C. C. A.) P. U. R. 1927C, 411.

[60] "We have had no particular difficulty with such contracts in this state. In a few instances utilities have submitted power rates which, from their point of view, were made necessary in order to retain large power business which was competitive with other sources of supply. In such instances we have required the utilities to submit the detail substantiating the reasonableness of such rates. There have been only a few such cases, however, and no difficulty has been experienced in refusing them. In one or two cases utilities have proposed informally to file schedules for the retention of such competitive business which schedules appeared to the Commission to be violative of the provision in the statute that the rates should be the same for all customers for like and contemporaneous service. That is, although the form of the proposed schedules indicated a general application, they were in fact planned to be applicable to only one or two customers and the applicability clauses were such that it was unlikely that other customers would ever be able to avail themselves of the rates. In such cases we advised the utilities that the Commission would not be able to accept the rates and they were not filed." Letter received from Dineen, W. M., Secretary Public Utility Commission of Wisconsin, January 8, 1931.

[61] New York Public Service Commission (State Division) Case No. 6493, November 5, 1930.

[62] Letter received from Roberts, Francis E., Secretary, Public Service Commission of New York, State Division, December 22, 1930.

tracts."[63] Reasonable diligence on the part of commissions, it would seem, can eliminate the discrimination resulting from individual contracts. However, special rate concessions to power customers have by no means been eliminated. In view of the heterogeneity of provisions and the prevalence of special contracts, it does not seem that rates for commercial and industrial power service are subject to close supervision and control by most of the commissions.[64]

Greater regulatory attention to the relationship of the rates which apply to the several classes of customers is necessary. The committee on public utility rates of the National Association of Railroad and Utilities Commissioners has suggested that more careful consideration be given to the influence of competition upon public utility rates, especially for electric service. The following excerpt from that report shows beyond a doubt that the members of regulatory commissions are aware of the situation.

In studying the rate schedules of public utilities throughout the country in connection with competition it is apparent that the old doctrine of charging all the traffic will bear is by no means obsolete. It is the only justification, if it be a justification at all, for the wide spread still existing between the rate paid by large industries financially able to consider seriously every available source of power or fuel and the rate paid by those classes of customers where competition is either absent or negligible. There is no question but that a power customer using five hundred thousand KWH per month costs the utility on a per kilowatt hour basis, substantially less to serve than ten thousand domestic customers using fifty KWH per month each. But, should the domestic customers pay more than six times as much per KWH as this power customer pays? Differentials as great, in fact in many instances greater, occur in the gas rate schedules. Indeed, they can be found within the narrow confines of the one class of domestic customers. . . . . A study of the so-called block form of rate making shows that the step downs in these blocks come at just about the point where electricity meets competitive fuels. This brings us in turn to the question of the extent to which competition should be recognized in designing utility rates. . . . The public utilities are constantly meeting competition from unregulated competitors. So long as the Commissions fix rates for public utilities enabling them to meet this outside competition and yet earn some rate of return and at the same time to run nearer to plant capacity thereby reducing percentage of overhead to their customers it is probable that no substantial injustice is being done to those classes of customers where little competition exists. But, can we assume that this is what we have done in designing such rate schedules? Is it possible that in approving or prescribing rates for wholesale customers which return 2 to 3 per cent to the utility, that contemporaneously we have designed rates for customers in the non-competitive class paying considerably above a fair rate of return to the utility? The difficult, and frequently thankless, task of equitably distributing the burden of revenue among the various classes of utility customers, after the utility has offered its rate schedules for approval, falls exclusively upon the shoulders of the Public Service Commissions. Up to this time the public generally appears to be unaware of the great question of equity between the various classes of the consuming public. This attitude has probably been caused by the undue amount of publicity devoted to valuation of public utilities for rate making purposes. We think the time has

[63] *Re Special Contracts by Gas and Electric Companies* (N. Y.), an investigation by the commission on its own motion, P.U.R. 1931E, 302, 311.

[64] Federal Power Commission, *Electric Rate Survey*, Rate Series No. 4, *Rates for Electric Service to Commercial and Industrial Customers*, 1936.

come to consider the question of equity in rate making between the utility customers or, in other words, rate relationship. There may be more inequity existing in this field than exists between the average public utility and its customers taken as a whole.[65]

Regulatory interest in the matter is a good sign. It cannot be emphasized too strongly, however, that a thorough analysis of costs is indispensable to equitable rate making. Adherence to cost principles concerning the rate of return on the property considered as a unit, itself replete with difficulties, is not more important or more difficult than the determination of proper rates for each class served. The latter cannot be realized unless the regulatory authorities are in possession of complete data and are painstaking in their use of it.

It is not to be denied that expediency and business judgment will always have a place in a problem as complex as public utility rate making, but it is equally true that the latter will be stressed in inverse proportion to refinement in cost analysis and the development of a clear social policy. There has been, apparently, a tendency to consider determination of rates according to competition or "value of service" as an alternative to cost rate making. To the contrary, the limitation of the competitive principle within bounds requires thorough cost analysis in conjunction with a mature consideration of how much each type of service can and should bear in the public interest. This approach, to repeat, does not bar recognition of the fact that, within limits, the cost of service is dependent on the volume of service. Cost as the basis for public utility rates should be more than a fine-spun theory. Rates closely approximating cost do not seem an unattainable ideal, assuming regulatory enterprise in ferreting out the facts with the cooperation of the company management. Cost analysis is an important technique in industrial enterprises; its desirability in public service enterprises, where charges are not determined within close cost limits by the operation of market forces, is even more pronounced.

[65] "Report of Committee on Public Utility Rates," *Proceedings of the National Association of Railroad and Utilities Commissioners*, 1930, pp. 87-88.

Chapter IX

SUMMARY AND CONCLUSIONS

Duplication of properties serving the same market was common during the introductory period in public utility operation, but direct competition was temporary and wasteful. This observation is confirmed by economic theory where fixed capital outlay is a predominant factor in total costs and where the economies of large-scale production are outstanding. The aim to get good service at the lowest price does not seem possible of realization through duplication of public utility facilities. The conclusion is the same whether attention is directed to experience or to theoretical considerations. Two competing producers serving the same market for a public utility service almost inevitably produce above the lowest cost point and have a combined capacity that is greater than the market requires. Strenuous efforts to capture and to hold all business which will yield anything more than prime or increment costs follow. Monopolistic organization, therefore, has become dominant in the public utility industries, and the ideal of one efficient seller has been accepted, with the reservation that the monopolistic power conferred should be curbed by social control over rates and services.

Moreover, while economy especially dictates monopoly only in the producing and selling of public utility services, the free operation of competitive forces when a public service enterprise enters markets in its purchasing activities has been mitigated by several circumstances. Virtual control of the seller's market reduces insecurity of investment or risk, which, in turn, operates to make it easy for a public utility to meet competition in the markets for capital. The labyrinth of intercorporate relationships which has developed particularly in the electric industry vitiates the argument for free competition in purchasing, because operating units usually are bound to deal with an affiliated organization for services and supplies. Ultimately the public utility is affected by competition for the factors of production; but this competition is so remote from the operating unit with which the consumer deals that he has little assurance that the operating company's alleged costs are the result of transactions in open competitive markets. The public utility organizations are in the position of being able to make a profit by the process of transferring from one pocket to the other.

The existence of so great a measure of monopoly necessitates social control. To this end, the gradual elimination of duplication has been accompanied by efforts to perfect a regulatory process, and undoubtedly the mandatory state commission, which has become the prevailing organ

of regulation since 1905, has been more satisfactory than its predecessors in providing continuous surveillance of rates and services. Under regulation by mandatory state commissions, direct competition has become gradually less prevalent. Most of the states have given expression in statutes to the conviction that duplication is undesirable in the public utility industries, and administrative bodies have been created to control the "natural" monopolies. The unavoidably general phraseology of most of the regulatory laws has given the commissions considerable discretionary power, although a commission cannot interpret its authority too liberally or in direct opposition to either expressed legislative policy or what is held to be constitutional process without running afoul of the courts. Considerable discretionary power remains, nevertheless, and commission policy has favored, for the most part, the use of it in the furtherance of monopoly conditions. Legislation concerning certificates of convenience and necessity has been given a strict monopoly interpretation, and a majority of the commissions have been disposed to assert their power to force good service at reasonable rates than to admit competition. Where extant and beyond commission jurisdiction to eliminate, competition has been made impotent, in not a few cases, by denying the privilege of unrestricted competition in rates. Contracts providing for division of territory have been sanctioned, encouragement has been given to consolidation, and where the control of competition is beyond commission jurisdiction, the municipalities have been urged not to issue competitive franchises. A highly monopolized situation has been the result, and the need for vigorous control of rates and services has increased in proportion.

But the results have not been completely satisfactory. The fundamental merit in principle that the mandatory state commission provides continuous control and supervision has been offset by the inclination of the commissions to neglect their duties as fact-finding bodies and champions of the consumers' interests and to degenerate into boards of arbitration. The intricacies of intercorporate relationships, the insufficiency of commission power, inclination, and resources to pursue the facts, and the vagaries of the valuation procedure have weakened the ability of the present scheme of regulation to cope with an ever-expanding monopoly power. The theory of regulation as a successor to destructive competition presumes a responsible and energetic agent with adequate power. The scheme depends for its success on the resolute administration of effectual legislation and on the attitude of the courts which pass upon the legality of regulatory action. It is apparent that there is need for further adjustment. Regulation has not yet achieved its chief purpose, that of substitute for competition where the latter does not operate economically. There are not a few who now counsel that more competition is imperative, not

because of its own intrinsic merit, but because they despair of perfecting a regulatory machine capable of being its successor.

Recently, there has been evidence of a renaissance of competition. Regulatory control of public utility monopoly has been weighed, and many have found it wanting. It is claimed that the law on which regulation is based has not responded to changing economic conditions in the industries. Some who are more conservative than the advocates of complete public ownership propose a modicum of public competition to bolster regulation. Most of all, there is a growing demand for easy legal access to competition where the private interests prove to be intractable. The principal advantage of laws favorable to public competition is considered to be the power which the right to compete gives the public in bargaining with the private interests. It is contended that the threat of competition will prove helpful, reinforced by competition in fact as a last resort. Municipal plants, public power districts, and federal government projects are to be "persuasive rather than destructive" in their influence. Whether or not the threat of public competition can be an economical as well as effective regulator of rates and service is problematical. Experience thus far indicates that it may be a successful realistic weapon with which to challenge entrenched private monopoly, but its promiscuous use would result once more in wasteful duplication.

Not only is greater reliance on direct competition through public operation being advocated, but the power of indirect competition, by substitution of alternative services, as a regulating force likewise is being urged. The writer has not been able to verify the claim that competition by substitution is so universal in the public utility industries as to afford a basis for rate control. Permitting complete initiative in rate making to management, and consequent charging on a traffic-will-bear basis, can only be interpreted as a simple but inadequate remedy for present deficiencies in regulatory procedure and an unwarranted surrender to the claim that efficient and energetic management can exist only where there is no restraint on freedom of action and on profits.

The public utility industries furnish a particularly good example of the confusion which attends the assumption that monopoly and competition necessarily exclude each other in any market. This view has led to a sharp but futile controversy as to whether these enterprises now are competitive or monopolistic. It has been customary in the past to refer to them as "natural" monopolies because entrance into the field is limited by economic circumstances crystallized into law. In recent years, however, there has been an increasing expression of opinion that the greater availability of substitutes has changed their monopolistic character, and it is vigorously asserted that the public utility industries are essentially

competitive whenever any evidence of resistance to the extension of their markets can be shown. If a choice were to made between the two, monopoly must continue to be the better fit because the challenge of substitutes can be accounted for through the elasticity of demand; and since substitution, in most cases, fails by a wide margin to be a matter of indifference, the elasticity will be far from infinite.

Nevertheless, the market relationships can best be expressed in terms of monopolistic competition, because the intermixture of competitive and monopolistic forces is so well illustrated in the public utility field. Moreover, it should help to clear up the misunderstandings and contradictions now prevalent to recognize that whatever differences there may be between these and other industries are only of degree. Other industries are not monopolistic or competitive in the perfect sense; and the same is true of public utility enterprises. There has been too much extremism in this matter; in public utility literature there has been too little recognition that both monopolistic and competitive elements are present. Instead, there has been controversy between those who are eager to stress the newer manifestations of competition and those who cling to the dogma that public utilities are a special type of industry because of "natural" monopoly. The designation of public utilities as "natural" monopolies has been unfortunate, not only because it fails to take into account that the monopolistic features have an institutional explanation as well as an economic one in the efficiency sense, but also because those who still refer to public utility business in this way have not been prepared to combat the exaggerated contention that new forms of competition have changed the picture completely.

Since most public utility enterprises enjoy exclusive franchise privileges, whatever competition there is usually must come indirectly from other goods or services.[1] While there are substitutes for almost anything, they are rarely, if ever, perfect alternatives. The degree of differentiation between the public utility service and substitutes and the feasibility of transference from one to another is, therefore, the vital issue. Substitutability is a relative matter, the effectiveness of which depends on a balancing of all the relevant factors which influence consumer choice. Any combination of circumstances which limits the free exercise of buyer choice must limit competition. In some cases, the competitive pressure may be fairly strong, where factors such as quality, convenience, price of service, and quality and price of complementary appliances strike an approximate equation, and the buyers have the purchasing power to make

[1] If the government, in its efforts to remove the abuses which have prevailed in the private power industry, continues to foster the development of competing public projects, the resulting situation might resemble duopoly in at least one respect. While monopoly profits could be curtailed by this policy, it is possible that this worthy accomplishment might be at the expense of maximum efficiency, if a condition of excess capacity extending over long periods were brought about.

effective a choice between the alternatives. When two services differ materially in price, the market divides roughly into two parts, one including those who do have the financial means necessary for the purchase of the preferred service, if it *is* higher priced, and the other those who must resort to the inferior substitute or go without. There may be little real competition between these markets except at the borderlines, although the lines of demarcation are likely to be blurred by advertising representations and price policy.

It must also be noted that there are numerous uses for public utility service. Since the demand is not homogeneous, there may be close competition with substitutes in some parts of the composite market and not in others. Furthermore, public utility service is preferred over substitutes for many uses by most people. When this is true, the public utility is in a strategic position to decide when and where it will take the offensive in the rivalry with alternatives. Comparative superiority in use affords the vendor of public utility service the opportunity to use rates as a balancing factor in the value equation, with the result that competition may seem to cover almost the whole market in which he attempts to operate. Given this condition, and it is by no means uncommon, substitutes may reasonably be considered as limitations on the exercise of monopoly power rather than competition on an equal plane. A system of price control cannot be adequate which depends for its action on many of the consumers penalizing themselves by turning to less desirable alternatives, either by choice or from necessity, in order to provide a check on the profit-seeking of the seller. The buyers of relatively small amounts of service, who cannot provide their own, especially lack the bargaining protection of approximately equivalent substitutes.

The identification of public utilities as joint-cost industries is predicated on the need for the greatest possible utilization of productive capacity, arising from the fact that fixed costs predominate. A necessary corollary to the above statement is that there must be unallocable costs which can be apportioned among the different classes of use according to what the traffic will bear. The economic desirability of complete utilization of productive capacity and complete exploitation of large scale economies in the public utility enterprises, coupled with the alleged impossibility of approaching that goal unless lower strata of demand are appealed to through special rate concessions, are the fundamental points in the contention that the unallocable costs must be placed on those whose demand will bear them.

The public interest may be consistent with the apportionment of unallocable costs to achieve lower unit costs through larger volume and more intensive utilization of investment. It should never be disregarded,

however, that concessions should be made only when the addition of the favored business improves the utilization factors and cannot be obtained except at inducement rates, that no business shall ever be granted a rate below prime costs, and that the remaining consumers shall benefit from the lower unit costs which follow from the larger scale of production. At all events, cost still must be the basis for rates, modified by allowance for differentiation which will promote a high degree of utilization of investment while at the same time avoiding unfair discrimination. Moreover, it has not been established that a public utility enterprise would be unable to attract a market which would develop high utilization factors with a substantially uniform system of rates instead of the discriminatory policies which have commonly prevailed.

In public utility enterprises differential rates, aside from cost differences, may be attributed to the need for complete utilization or to the greed of the monopolist. Monopoly may be in itself a sufficient cause of differentiation; and if the monopolists are free to follow their own interests, it is to be expected that the quest for monopoly profit will take precedence over desire for full utilization as the correct explanation of existing rate differences among customers.

Promotional rates of the selective, discriminatory type aim to attract the elastic demand with a low charge, and the purpose can be accomplished by charging off the greater part of the fixed costs against the initial and at the same time most necessitous service, following with a low energy charge to appeal to the elastic demand. There is danger, then, that the user of a minimum amount of service may be the object of discrimination by the misuse of what purports to be a "scientific" rate based on cost. In addition, there can be an element of coercion in applying a high rate to initial essential use unless sufficient additional service is taken to make the average rate paid for total consumption relatively low. Undesirability of over-promotion is indicated, again, with reference to the expense of installing equipment and appliances. The resulting rigidity of demand makes possible the reduction of rates below cost for a time, and selling appliances on the same plan, until a sizable load has been attracted, then increasing the rates to take advantage of the inelastic demand which the expensive investment occasions.

It has been said that the public utilities, when conditions for decreasing costs and elastic demand obtain, will be prompted to adopt a long-time view and to forego immediate monopoly profits in order that a large volume of business may be developed. This assertion does not survive when tested by reference to the policy adopted by the industries. It does not appear that the public utilities, as a group, have adhered consistently to the maximum development ideal in all fields.

The disparity between the rates paid by domestic customers, small power users, municipalities for street lighting, and large industrial power customers indicates that rates are determined on the basis of the practicability of substitution. The fixed costs, and sometimes fictitious costs, are allocated in conformity with the monopolistic and competitive features of the market. But there may be an error in the complaint that smaller consumers are charged higher rates *because* large users are granted undue concessions. The exaggeration of the cause and effect relationship between domestic and large power rates obscures the fact that the primary reasons for high rates to the small consumer are the ineffectiveness of his own bargaining power and the inadequate protection accorded him by regulation.

The elasticity of the demand, due in part to the power of substitution, does set a limit to the price that a monopolist can charge and still realize the maximum net profit. It is no startling revelation that a public utility monopolist is prevented, because of the availability of substitutes, from charging as much as he would otherwise be disposed to do. It is a very different proposition that monopoly price in the case of a public utility exempt from competition with a like service will at once realize maximum profits and maximum use, or that rates based on competition from substitutes yield to the monopolist a return which will completely cover all costs and no more. The alternatives are not sufficiently equivalent, for the most part, to the public utility service to be competent to effectuate the desirable result of cost price and adequate service.

Discrimination in rates, and in service too, will be used most extensively where elements of monopoly and competition are mixed. In fact, not only in the public utility industries but in others as well, there is need to bring the effects of discrimination to bear on the theory of monopolistic competition. Most of the efforts of public utilities to extend their markets by means of rate adjustments have involved the use of discrimination rather than general reduction in the level of rates. Whenever the quality appeal of public utility service is insufficient, a discriminatory policy can provide the additional inducement of a preferential rate, thus enabling the seller to pick and choose in the broad field of possible customers and uses, with immedate or future profit as the guide. If discrimination is carried far enough, the challenge of substitutes can be met wherever they threaten, and with rates the balancing factor, the impression can be created that competition blankets almost the entire market. Some competition there doubtless would be without discrimination, but the composition of the market is greatly distorted when discrimination prevails to the extent that it has in some of the public utility industries. The market relationships resulting from discrimination can be described

as predominantly competitive only if it is granted that any pricing policy which establishes a market equivalence between differentiated goods is evidence of a really competitive market. Discriminatory strategy taken into account, what appears to be widespread competition is revealed as monopoly in disguise.

That part of public utility service which is sold to industrial plants meets a fairly high degree of competition from alternative sources of fuel and power. But even this statement is subject to qualification, for the gradual ascendancy of central station electric power is indicated by past developments and existing technological conditions. It is likely that the impression of the highly competitive nature of the industrial power business is gained from an overemphasis of those exceptional situations where special circumstances make the cost of generating electricity in conjunction with industrial processes unusually low. The impression that all power business is within the potential market for central station service is evidence of confusion as to what the term competition encompasses. The existence of two or more possible productive methods or of more than one way to satisfy the same want does not provide competition that is an acceptable instrumentality for rate or price determination and control unless the alternatives are interchangeable in terms of both utility and cost. For example, when a new process has proved its superiority over a public utility service, there exists, not an example of competition, but of displacement and of differentiation of markets. Efforts to retain business in such a circumstance by discriminatory bargaining is not evidence of sound competition. More careful cost comparisons and less rate shading in dealing with so-called competitive business is required by the public interest in the economical use of resources for the greatest gain to society.

The cost and inconvenience of conversion from one source of heat or power to another, due to the need for expensive equipment of a specialized nature, has been overlooked as an obstacle to free competition, not only in serving industrial consumers of utility service, but every other class as well. A public utility may not relish the restraining influence of expensive consumer investment in appliances on its campaign to promote the use of its service, even when rates considered independently may be such as to recommend the economy of that procedure. The factor of costly equipment which is complementary to the service exerts an influence in both directions, however, so that the transition once made, the public utility has gained a monopoly advantage in the same manner, by virtue of the disinclination of the consumer to discard expensive and specialized equipment. Moreover, demand generally is less elastic for a rate increase than for a decrease. This is one way of saying that business

once attached is, within broad limits, permanent business, a fact which is particularly true of the domestic business of gas and electric companies.

The power of substitution is active within closer limits of price range in the industrial power and heating service and in long-distance communication than in the other classes because the alternatives are more equivalent, cost and quality of service considered together. In addition, industrial customers usually are financially able to weigh in the balance all factors, including convenience, energy cost, complementary costs, and the quality of the result. Nevertheless, in industrial heating, and in communications and transportation as well, a differentiation of economic function between the apparently competing services can be noted. In transportation and communications, the recognition that each type of service has a special province for which its economic properties particularly adapt it has resulted in the demand that competition be abandoned and a policy of co-ordinated control be instituted. Gas and electricity are suited for heat processes of a refined sort, but their cost, compared to that of the crude fuels, makes their universal application wherever heat is required extremely uneconomic. A brief for the competition of gas and electricity with each other would carry weight were it not for the fact that the two industries are interrelated in their control. There is a more pronounced tendency toward a differentiation of use between the crude fuels and the public utility services.

The presumption of vigorous competition in public utility business results from the failure to realize that the struggle of several products and services for the market may be a manifestation of a period of transition. It surely is significant that gas, electricity, and kerosene, not very many years ago, were contesting spiritedly for the business of lighting homes. Such struggles can be very bitter, but their impermanence makes it impracticable to base rate control on the competition among substitute products and services. Rather than a permanent regulator of price, transitory competition is essential to a final determination of the superior function of each of the alternative products and services. The conflict in the field of transportation in recent years is illustrative; and the true marketing relationship between gas and electricity might stand out more clearly if the two were not subject in large measure to a single control. It is not always possible clearly to draw the line in the beginning between that competition which is permanent and that introductory period of rivalry which serves as a laboratory in which to decide the special field of best adaptation for each product or service.

It is necessary to emphasize, therefore, that an understanding of the action of competitive and monopolistic forces in public utility markets requires that the time element be taken into account. In this regard,

conflicts incident to fundamental shifts in demand and the disturbances associated with technological change and economic displacement may seem to offer evidence of permanent competitive relationships. The very keenness of the transitional struggle is apt to be misleading if only a short-run view is taken, and however significant the eventual consequences may prove to be, the competitive relationships in the longer run need not be very close. Such transitional processes are characteristic of the public utility industries, and they frequently, but not invariably, point to gradual market supremacy for the public utility service in many uses. The shift to improved techniques and superior service may be delayed if an unprogressive, restrictive rate policy is adopted. Public utility operators have been inclined to do precisely that by weighing the present against the future, the monopolistic elements (economic, institutional, and political) putting them in a strong position in this respect. Pursuing a policy of carefully nursing the profit potentialities, they have, whenever possible, maintained a high rate level, stressing quality and convenience rather than price, and depending on the superior features of public utility service to bring gradual increases in volume. Simultaneously, they strive to create the desire for service by emphasizing its quality advantages, and then restrict its use by adopting a monopolistic rate policy. Allegations as to the competition encountered in extending public utility service and complaints about the difficulty of attaining the maximum economical output cannot soundly be judged unless rate policy is taken into account. This point seems to have been overlooked by those who are greatly impressed by the competition in the markets for public utility service. Modern technology, especially in the electric power industry, must profoundly affect price policy if the potentialities of low cost and elastic demand are to be resolved into maximum service.

As differentiated products and services meet in the market, there normally is a tendency for a differentiation of function, partial or complete as the case may be, to be worked out. Public utility service demonstrates a comparative advantage in some applications and substitutes in others. Where there are indications of a differentiation of function, competition may be regarded as wasteful, temporary, and incidental to transition. But the widespread use of discriminating tactics, by the public utility enterprises and by the sellers of the partially competing substitutes as well, has the effect of generalizing what amounts to a practice of "dumping," with inevitable chaos and indeterminateness in market relationships, even as it seems that the scope of competition is enlarged. Differentiation of function and separation of market spheres may be obscured, and economical distribution of resources and maximum social gain may be lost in the shuffle, when sellers of substitute products and services base their actions on the assumption that the entire market for

heat, power, communication, or transportation is a potential source of business. Continued disregard of economical market spheres results in persistent and all-around excess capacity; costs and prices then are higher than necessary, particularly when decreasing cost tendencies operate; and aggregate output, in turn, will be less than the maximum potential amount. Profits will vary among the participants, depending on relative economic advantages, comparative amounts of excess capacity, and astuteness in estimating and realizing upon the market possibilities. Amount of profit, even though it be normal or less, is no sure test, therefore, of the absence of substantial monopoly or of the presence of desirable competition. It follows that regulation which is concerned chiefly with limiting return to a "fair" amount will fail to achieve socially desirable results.

The disappointing outcome of the practices referred to in the preceding paragraph frequently has led to the adoption of other procedures, such as the co-ordination of gas, electric, and other partially competing goods and services, resort to legal protection against the encroachment of substitutes and new industries, and the creation of intricate patterns of common intercorporate control. It seems altogether reasonable to interpret these tactics as efforts to restrain or eliminate whatever competition there might otherwise be among the goods and services combined. The results will be to consolidate monopoly power, to preserve all the enterprises by warding off losses from excess capacity and possible obsolescence by shifting the burden to consumers, and to manipulate the price structure of the combined services for greatest aggregate gain at the expense of maximum social service.

Discriminatory rate making, to the degree that it exists, must have the tacit if not expressed approval of the regulating commissions. While it has commonly been supposed that state commissions have upheld the theory of cost rates, and while the regulators have rendered superficial allegiance to the cost-of-service ideal, a study of commission rate cases discloses that in practice the regulating bodies have been disposed to permit rate making on a competitive basis to a marked degree. In fact, until recently the commissions have not been much concerned with rates to large users, in the belief that the latter can protect themselves. As a consequence, private contracts have become general, the terms of which never have had regulatory approbation.

In short, the commissions have employed a vacillating policy, reflecting their indecision between the two considerations that rates should approximate costs and that some allowance must be made for differentiation because of the desirability of maximum use and a high degree of utilization of facilities. As a consequence, there has been a disposition to let matters take their course and a tendency to permit rates to stand which are not patently discriminatory. The inadequacy of personnel and

funds, disproportionate attention to the "fair value" quandary, unavailability of sufficient cost data, the complexity of rates and rate schedules, limits to the power of a commission to infringe upon management prerogative, and inertia are all factors which taken together explain the failure to hold rates shaped according to what the traffic will bear within proper bounds and more closely to approximate cost rates.

Other students have noted the implications of the theory of monopolistic competition with respect to social control. In the case of the public utility industries, it may be stated with special emphasis that the recognition of competitive elements in this still preponderantly monopolistic field does not mean that public control should be relaxed. To the contrary, the inference is that there is a greater need for it while at the same time the difficulties are magnified because the factors are more complex. The evidence points to the conclusion that the competitive as well as the monopolistic elements require control if the public interest is to be safeguarded. Public utilities have been willing to make sufficient concessions to get what they consider to be "highly competitive" business; but on social grounds, in those parts of the market where substitutes *are* more effective, the need for public utility service is not so pressing as where the substitutes are decidedly imperfect. The social problems in the public utility industries are still, in the main, the consequences of monopolistic practices, or of the monopolistic elements in monopolistic competition, if that terminology is preferred. Specifically, the reference here is to rate maintenance, restriction of output, discrimination, and devices for intercorporate control, with the accompanying failure to achieve an economical distribution of resources and the maximum product or service for society.

That most of the responsibility for the inequity of rates can be traced to the failure of the regulatory machinery to function up to expectations is no startling discovery. Unless regulation, armed with the power and the inclination to study costs, can be vitalized, rate making will continue in the paths which the profit motive of the public utilities decrees. It is not in accord with the prevailing philosophy of business enterprise to expect private corporations voluntarily to renounce monopoly profits and practices for the benefit of society. The only alternatives to adequate social control are dependence on competition, direct or indirect, as a regulating force, or what would be a more revolutionary innovation, general public ownership and operation. For an abrupt and complete change to the latter, the nation probably is not prepared. Perhaps a measure of unselfish devotion to the public service on the part of all concerned will relieve a crisis which appears imminent. An enlightened view on the part of those who now control the private utility enterprises might be to their own long-time advantage.

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